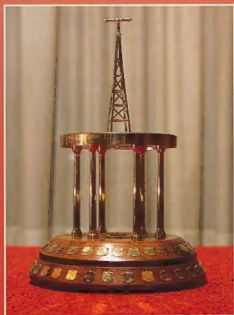


Amateur Radio



VOL 54, No 7, JULY 1986

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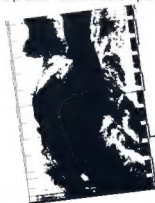
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Left: George VK5AGK, transmitting at Angkang in the Barossa Valley, while Norm VK5ZAH, logs the contacts. George and Norm were operating aboard the Jubilee Industry Trade Train. See page 23, June AR. Photograph courtesy Peter Wagner VK5AWV of the Barossa Valley Radio Club

Inset: The Remembrance Day Trophy which is presented to the winning Division after the contest results are announced. See Contest Column for a history of the Trophy. Photograph by Ken McLachlan VK3AH

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The Remembrance Day Contest is the Big One on the VK Contest Calendar, and it is almost that time of year again. This month's Contest Column features the rules for the 1986 Contest. Ian VK5OX, also takes some time to explain the reasons for this Contest and gives an insight into the life of the trophy.

It is always interesting to look ahead and wonder what life will be like a decade or so ahead from the present. Alan VK4SS, the VK4 Historian, looks at the year 2035. Alan located an article in a 1936 *Amateur Radio* and it is interesting to read what the writer considered how amateur radio may be, 50 years hence when one considers how the majority of radio equipment was home-brew in 1936.

Tony G4FAI, AR's correspondent in London, has written to say that VHF and UHF licenses in Britain now have permission for Morse transmissions as a permanent feature of their licenses. Last year, an experiment was held whereby temporary variations of the Class B licence were issued and this experiment has proved so successful that the DTI has granted the concession as a permanent feature, page 25.

Impossible to work 42 countries on six metres from Australia? No. Eric VK5LP includes the full listing of the 42 countries to work VK5GB, on six metres from Darwin. This includes the dates of the initial contacts so you may check your logs and see how conditions were on six from your QTH on the particular dates.

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EMTRONICS



Editor's Comment

1986 — A Rather Special Year

Those of you who take the trouble to read these bursts of vaguely relevant verbiage have probably noticed that every so often I have pointed out historical occurrences of interest to us as radio amateurs. The editorial banner has had titles in the past such as "More History" and "More Anniversaries". And now I am impelled to do it again! This year of 1986 has not only been distinguished by the return of Halley's Comet, regrettably not as a spectacular as in 1910, but by several other notable anniversaries as well.

Firstly, as our colleagues in VK5 are reminding us so well, this is the sesquicentenary of the State of South Australia. All this year we have the opportunity to work VK5JSA, and VK5s generally, towards the acquisition of the Jubilee 150 Award. The full details were published last October. This is only one of many amateur activities, and State-wide celebrations as well, which will reach their peak on 28th December, the 150th anniversary of the Proclamation of the Colony of South Australia by its first

Governor, Captain John Hindmarsh of the Royal Navy.

Exactly half as old as South Australia, our own Royal Australian Navy is this year celebrating its 75th birthday. The WIA is just over one year older, and evolving together as they have, the two organisations have always shared a common interest in radio communication, albeit from somewhat different viewpoints. Many of our members were or are members of the Navy also, their amateur radio interests no doubt contributing to their professional competence. There is at least one Admiral among our ranks!

Fifty years ago, on 2nd November 1936, the world's first regular public television broadcasts began, from the Crystal Palace, London. The expansion of television since then has been truly fantastic in all respects, technical, information and entertainment. Global television coverage of almost everything has become commonplace, bringing us all much closer to that "one world" of which many have dreamed for centuries. Australia joined this electronic

extravaganza just 30 years ago, towards the end of 1956. And both here and elsewhere, there is probably no television broadcasting system which does not have a number of radio amateurs among its staff.

Finally, 1986 has brought us the 25th anniversary of manned space flight, from the intrepid orbit of Yuri Gagarin to the near-routine space laboratories of today. Not quite routine yet, nor is every engineering detail perfected, as was so tragically demonstrated by Challenger only a few months ago. The lessons learned from that catastrophe will never be forgotten. As always in human progress, success is built on failure. We may be sure that future Shuttles, and later spacecraft, will again carry radio amateurs with whom we, earthbound, may converse. Even more surely, some of the engineers and technicians who make space safe again will be our fellow amateurs. Times like this special year of 1986 give us good cause to reflect and be perhaps a little proud!

Bill Rice VK3ABP
Editor

MODIFYING THE ICOM PS-15 POWER SUPPLY

Ron Fisher VK3OM

3 Fairview Avenue, Glen Waverley, Vic. 3150

The Icom PS-15 is an excellent power supply but it has two limiting factors. Firstly, there is no AC power switching, this being accomplished from the matching transceiver, and secondly, there is no auxiliary DC output.

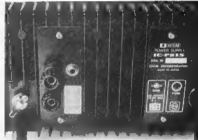
In a recent review of the new 735HF transceiver, I mentioned that I had modified my PS-15 to overcome these limitations. Several amateurs wrote to me asking just how this was accomplished, so here is the story.

If you have a PS-55, the matching AC supply for the 735 transceiver, I am sure a similar modification could be done. However, I have not done this, so the details are up to your imagination.

The story is best told by the photographs of the two power supplies which have been modified thus far.



The PS-15 showing the added AC switch in the bottom left-hand corner.



The rear view showing an auxiliary DC output terminal, also the 3.5 mm socket for speaker connection.

they did it would be unnecessary to but the matching speaker!

For the basic modification, both the switch and terminals are available from Dick Smith. The AC switch used is a push on/push off type, and it matches the front panel perfectly. Before drilling the mounting hole, remove the front panel from the power supply cabinet and place it on a firm flat surface. The panel is secured by eight screws around the edge.

The switch is wired in parallel with the existing switching connection that goes to the transceiver. This enables the power supply to be switched in the normal manner from the transceiver or if any auxiliary piece of equipment is to be used, from the power supply.

The DC output terminals are mounted on the left-hand cover plate at the rear of the supply and the DC leads are routed down through the slots in the heat sink, then up through a couple of ventilation holes at the bottom rear of the cabinet.

The negative lead should go to an earth point and the positive lead if the regulated output point on the vertical board. The

photograph also shows a 3.5 mm socket for the internal speaker added to the second version.

My PS-15 now runs the whole station, an IC-745 transceiver, a TS-430S transceiver (but not both together on transmit), and a TR-950 45 watt two metre FM transceiver. If you have a cluster of power supplies on your bench, try this simple, but effective modification. Maybe the next model Icom supply may even have included something similar.

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Abridged from Electronics News, p23 — April 1986



The PS-15 Power Supply as modified by Reg VK3CCE.

The first one I did provided for the two above requirements, whilst the second, modified by Reg VK3CCE, also included a loud speaker and a DC ammeter. It is a strange thing that neither Icom or Kenwood incorporate a speaker in their DC power supplies. I guess if

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Federal Secretary
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Dear Sir

I refer to my letter of 24 April 1986 in which I indicated that the time limit applied to exemptions for partial examination qualification was to be removed.

You will recall that, since November 1982, persons who obtained partial qualification at examinations for amateur certificates of proficiency have been granted a two year exemption in those subjects passed. I am pleased to advise that this situation has been reviewed and that the two year limit no longer applies.

As from 18 February 1986, all candidates who obtain partial qualification at amateur examinations are granted permanent exemption in those subjects passed. A permanent exemption is also extended to those persons who at the time of the February 1986 amateur examination (i.e. 18 February 1986) possessed a valid exemption under the previous 2 year provision.

The responsibility for demonstrating to the Department that a part qualification was previously obtained rests with the applicant. Original documents must be supplied at the time of application for a certificate of proficiency, copies will not be accepted.

It would be greatly appreciated if you could arrange for the information outlined to be promulgated in the normal manner available to the Institute.

Yours sincerely

D Hunt
Manager Regulatory
Operations Branch
Radio Frequency Management Division
Canberra

23 May 1986

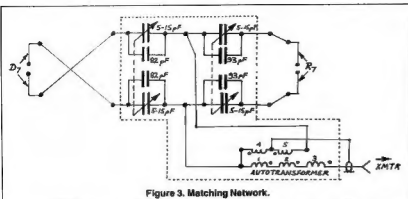


Figure 3. Matching Network.

50 VCh, K32x16x8 — other details unknown). The winding is constructed by twisting together 12 multi-wire cables of one millimetre diameter in PTFE insulation and forming four turns on the toroidal core. The ends are connected as in the circuit diagram making sure to use minimum lead lengths to maintain a compact construction.

The auto-transformer has 16 turns in the output section and eight on the input section, giving a transformation coefficient of 0.5. This may be increased if necessary by reducing the number of windings on the output section, eg 15 turns equals 0.533, 14 turns equals 0.57.

Each of the tuning capacitors consists of a 5-15 pF variable plate condenser in parallel with a fixed capacitor (82 pF for the director and 93 pF for the reflector). The matching unit is housed in a plastic box 150 x 100 x 50 mm internal dimensions.

Table 4. Directional Characteristics of 7 MHz Antenna.

AZIMUTH	REL. POWER %	AZIMUTH	REL. POWER %
30	75	195	8
60	25	210	2
75	10	225	3
90	10	240	10
105	13	255	11
120	10	270	10
135	5	285	10
150	3	300	23
165	7	330	75
180	8	0	100

The directivity pattern of the 7 MHz antenna is shown in Table 4.

NOTE: The above article was translated by Robert Hancock VK5AFZ, 30 Tottenham Court Road, Port Elliot, SA. 5212. If any readers would like further explanations of the article please write to Robert, please include an SASE.

63

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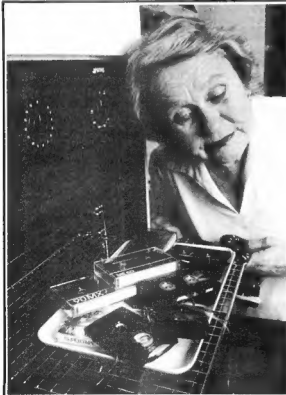
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WHERE DO I BEAM?

Ian Crompton VK5KIC
9 Craig Street, Richmond, SA. 5033

The following program was written for the TI-59 calculator, but it should easily convert to other programmable units.

Just what is the distance between your station (or receiver) and the station you're working (or receiving)? Not the road distance, the direct shortest distance which shows up on a Mercator Projection map, such as a Great Circle Distance. What heading would the beam best be set to?

Both questions can be answered by this program!

The formulae are:

Distance (in degrees of latitude) =

$\arccos[\sin(\text{lat}_1) \sin(\text{lat}_2) +$

$\cos(\text{lat}_1) \cos(\text{lat}_2) \cos(\text{lng}_1 - \text{lng}_2)]$

To convert this to statute miles, multiply by 60, to Statute (ordinary) miles, multiply by 68.98, to kilometres by 111. I couldn't track down these conversion factors after the first in my books, so had to work them out.

Beam Heading = $\frac{\sin(\text{lat}_1) - \cos(\text{distance in degrees}) \sin(\text{lat}_2)}{\sin(\text{distance in degrees}) \cos(\text{lat}_1)}$

If the sine of $\text{lng}_1 - \text{lng}_2$ is < 0, then heading is 360-heading calculated.

Eastern longitudes and southern latitudes are entered as negative, western longitudes and northern latitudes are entered as positive.

Coding for the TI-59 calculator follows. Writing these formulae up in BASIC for a home computer does not seem too great a programming challenge. In these formulae, latitude and longitude of your transmitter or receiver are abbreviated as lat and lng, and latitude and longitude of the station heard by lat, and lng.

In the program which follows, lat₁ is stored in memory-one, lng₁ in memory-two, lat₂ in memory-three, lng₂ in memory-four. Distance (in degree format) is stored in memory-five.

Heading as calculated is stored in memory-seven while the test following the calculation is performed.

In many cases, the only information available about latitude and longitude of transmitter/receiver location or of the station heard location will be found expressed in degrees and minutes from the Gazetteer of an atlas.

This program converts the angle from the degree-minute-second format to the decimal-divided format used in calculation before storing it in memory.

Enter TX/RX latitude in ddd.mm(ss) form into display. Key A accesses a subroutine which converts this format into decimal-divided degrees before storing the result in memory-one.

Then enter TX/RX longitude (lng₁) into display in ddd.mm(ss) form, then into memory-three using the program on Label B.

Station heard latitude and longitude (lat₂ and lng₂) are put into memory-three using C and memory-four using D.

Distance is calculated by subroutine labelled E, and heading by a subroutine labelled E'.

Before using the program, enter TX/RX

latitude into the display at this point. The latitude is keyed in in ddd.mm(ss) form.

Coding

000 76

001 11

002 88

003 42

004 01

005 92

006 76

007 12

008 88

009 42

010 02

011 92

012 76

013 13

014 88

015 42

016 03

017 92

018 76

019 14

020 88

021 42

022 04

023 92

024 76

025 15

026 53

027 53

028 43

029 01

030 38

031 65

032 43

033 03

034 38

035 54

036 85

037 53

038 43

039 01

040 39

041 65

042 43

043 03

044 39

045 65

046 53

047 43

048 04

049 75

050 43

051 02

052 54

053 39

054 54

055 54

056 22

057 39

058 42

Comment

Label A converts from ddd.mm(ss) form into decimal-divided degrees form store in memory-one end of subroutine, restores control to keyboard.

Key in lng₁, the longitude of transmitter or RX site. Label B, used to enter TX/RX longitude, lng₁.

converts from ddd.mm(ss) form to decimal³ form

store in memory-two end of subroutine, restores control to keyboard.

Key in latitude of station heard in ddd.mm(ss) form. Enter using procedure under Label C converts latitude from ddd.mm(ss) form to decimal³ form

store in memory-three end of subroutine Key in longitude of station heard lng₂ in ddd.mm(ss) form

Label D converts from ddd.mm(ss) form to decimal³ form

store in memory-four end of subroutine.

Label E for the Distance calculation

recall memory-one, TX/RX latitude take its sine

multiply by

recall memory-3, station heard latitude take its sine

+

recall TX/RX latitude

take its cosine multiply by

recall station heard latitude take its cosine

multiply by

recall longitude of station heard minus

recall longitudes of TX/RX site

take cosine of result

arc cosine

059 05

060 92

073 76

074 10

075 53

076 53

077 43

078 03

079 38

080 75

081 53

082 43

083 05

084 39

085 85

086 43

087 01

088 38

089 54

090 54

091 55

092 53

093 43

094 05

095 38

096 65

097 43

098 01

099

100 54

101 54

102 22

103 39

104 42

105 07

106 00

107 32

108 63

109 43

110 02

111 75

112 43

113 04

114 54

115 38

116 22

117 77

118 01

119 25

120 43

121 07

122 92

123 68

124 68

125 43

126 07

127 94

128 85

129 03

130 06

131 00

132 95

133 92

134 92

135 92

136 92

137 92

138 92

139 92

140 92

141 92

142 92

143 92

store distance in degrees' in memory-five end of subroutine to get distances in nautical miles, Statute (ordinary) miles, or kilometres, multiply the contents in memory-five by the appropriate factor. That was being done, in a lengthy way, in the gap in the program here. Label E', used to calculate the heading, given the input data and the value just calculated.

recall station heard latitude take its sine minus

recall memory-five, distance just calculated take its cosine multiply by

recall TX/RX latitude take its sine

divide by

recall distance in degrees' take its sine multiply by

recall TX/RX latitude take its cosine

arc cosine

store result in memory-seven

put 0 into test register

recall TX/RX longitude minus

recall station heard longitude

take sine of result

test if < 0

if so, go to 125

recall calculated heading end of subroutine no operation (filling!) no operation (filling!)

recall calculated heading change sign plus

360 = end of subroutine, end of calculation

Following are two examples:
Moorabbin to Yarrum Display
Enter latitude of Moorabbin -37.59
Press A -37.98333333
Enter longitude of Moorabbin -145.12

Press B -145.2
 Enter latitude of Yerrum -38.35
 Press C -38.58333333
 Enter longitude of Yerrum -146.45
 Press D -146.75
 1.343477858
 Press E to calculate distance in
 degrees of latitude
 The same as 150.6 km
 Press E' to calculate heading 118°

Moorabbin and Stawell	Distance
Moorabbin values are in memories	
one and two	
Enter altitude of Stawell	-37.05
Press C	-37.08333333
Enter longitude of Stawell	-142.47
Press D	-142.78333333
Press E to calculate distance 'in	2.056718201
degrees'	
in kilometres 235.0	
Press E to calculate heading	294°

ACKNOWLEDGMENTS: Hewlett Packard for including this among their Standard Pac series of programs for their HP-65. TAB Books for publishing it as one of many items in their 'Advanced Applications for Pocket Calculators'.

JUMBLED???

Unfortunately, one line of Novice Notes, page 25, June issue got completely jumbled at the printers. The offending line is the first line, bottom right hand corner. This line should be at the bottom of the second column, same page.

The paragraph should read thus:
 If only low power operation is contemplated, C1 may be an ordinary dual-gang broadcast capacitor. These are not too difficult to find. For higher power work, C1 must have wide spaced vanes. A dual-gang 200 or 250 pF unit would be fine for this. C2 may be a dual-gang 415 pF BC type, even for power levels to the legal limit. The shafts of these two capacitors are nominally at RF earth potential, so no special insulating precautions are necessary.

Please delete the offending line, right hand side, below Figure 4.

Apologies are extended for the confusion caused.



QSP

VOYAGE OF ST JUPAT

According to reports, the two young Hungarian engineers, Nandi and Joe, who are on a round-the-world navigational trip, (see initial report in AR, February page 18), were expected to sail into Sydney Harbour on about 20th May 1986.

They left Capetown, South Africa, on 12th March 1986. Their sailing course along the Roaring 40s took them steadily eastward. They have battled huge seas, dampness, the sea-water and salt sea-sickness, shortage of fresh food and they even had problems with a poorly functioning generator which is used to charge their radio batteries. They were no doubt glad to set foot again on terra-firma.

On board the 30 feet, four ton (3m, 4 tonnes) vessel they have a small FT-7, 50 watt amateur radio station which they use with the call sign HG4SEA/MM, however, it was only in early May that regular radio contact with them was established.

ZL1BM, from Auckland, New Zealand, has been supplying them with up-to-date detailed weather reports on their regular daily scheds on 14 MHz. Roger VK2XJ, Peter VK2OG and Steve VK2PS have also been in daily contact with them on the 20, 40 and 80 metre amateur bands.

The duo intend to stay in Sydney for a few months to attend to the necessary maintenance and repairs to their boat and equipment.

Weather and winds permitting, they will then continue across the Pacific towards the Americas.

Hopefully, we will have a full report of the boys arrival at Sydney in the next issue of AR.

Contributed by Stephen Palf VK2PS

AIRCRAFT RESTORATION

Keith Muller

C/o Department of Aviation,
 PO Box 24, St Marys, NSW, 2760

Probably in years to come, arguments will arise as to which aircraft was the best in air battles of the Second World War. With such a variety of operational requirements, that argument may never be resolved, although one aircraft did stand out in a number of aspects.

Enter the *De Havilland MOSQUITO*. Constructed of Balsa wood sandwiched between wooden ply layers, powered by a pair of the remarkable *Rolls Royce MERLIN* engines, it was fast and manageable. It carried a considerable bomb load for its size, was used as a bomber, fighter, photo reconnaissance, night fighter and passenger carrier.

It was used by the navy as the *SEA MOSQUITO* and six different air forces. It was deployed as far afield as Asia and the Pacific war theatres, although it's maximum effort was in the European theatre, where it caused many a Luftwaffe pilot's heart to beat faster than normal.

A total of 7800 Mosquitoes were built by a number of factory units in England, to the design perfected by the De Havilland Aircraft Company.

In Australia, the De Havilland factory at Bankstown, New South Wales, produced 212 of the total for the Royal Australian Air Force squadrons in the Pacific war theatre. The majority of Australian production was known as the *Fighter Bomber Mk 40*, but a number of the Mk 40 were converted to *Photo Reconnaissance Mk 41*, and this forms the basis of the story. The Hawker De Havilland factory at Bankstown, in this year, 1986, some 40 years after its initial production, Mosquito A52 — 319, a Mk 41, is undergoing a complete restoration.

Mosquito A52 — 319 occupied a proud position outside Perth Airport for many years after the War. As the years passed, the extreme elements of the Australian sun and moisture caused considerable deterioration to the wooden air frame.

Vandals and collectors caused further loss and eventually A52 — 319 was towed behind the hangars to further neglect. An overseas buyer built a massive frame and planned to shift A52 —

319 to America. He succeeded in shifting it to Melbourne where, in 1979, the Canberra War Museum came to the rescue of this sorry aircraft and purchased it for restoration and inclusion in the Museum Aircraft Collection.

The De Havilland factory again played a vital part in the life story of A52 — 319 and today it nears completion under the hands of dedicated people.

John Chadwick of the factory is the restoration project officer, on behalf of the War Museum, and although he can manage the restoration of the airframe and the engines, there is a complete lack of radio equipment. It is hoped that amateurs throughout Australia may be able to help with the construction of this famous war-bird.

Contributors will receive recognition of their efforts.

Parts required are:
 Marconi T1154 transmitter; R1155 receiver and serial coupling switch.

Cables and plugs for the T1154, R1155.
 A left/right hand indicator for DF operation — this fits in the instrument panel.

The Loran APN9 navigation equipment.
 The AC inverter 28 volt input 115VAC 400 Hz output — it has the voltage control on top. This is about 12 inches long by 12 inches high (about 30 cm).

Rebecca set SCR895 (3C955A).
 A four-channel controller for the VHF transmitter/receiver SCR 522/TR 8043 with plugs and cables.
 A restored SCR 522 and PE 94B rotary power supply has been obtained.

An Air Ministry brown Bakelite Morse key.
 Two sets of Air Ministry headphones.
 Any other instrument parts associated with the Mosquito.

For further information contact John Chadwick at Hawker De Havilland Training School, 6 Ladbroke Street, Milperra, NSW, 2214, or phone Keith Muller, Department of Aviation Transmitters, Lindroth (02) 628 6777.



Mosquito A52 - 525 of No 1 Squadron, RAAF

PRACTICAL EARTH RESISTANCE MEASUREMENTS

George Cranby VK3GI
PO Box 22, Woodend, Vic 3442

A simple, but fairly accurate and widely accepted method of determining the resistance of an earth rod.

Having read with great interest the article *Aerials and Earths* by John Gazard VK5JG, in the May issue of *Amateur Radio*, I thought it may be useful to bring to readers notice a simple, but fairly accurate and widely accepted method of determining the resistance of an earth rod.

Place three similar earth rods, at least four to five metres apart, in the form of a triangle, and to an equal depth. Measure the resistance between each pair of rods.

The best equipment for this would be an *Earth Megger* or similar, but access to this type of equipment may be a bit difficult. The next best method is the application of a measured voltage between each pair of rods, measuring the current and calculating the resistance. If DC — say, from a car battery — is used, two readings must be taken by reversing the polarity, and the average of the two readings must be used.

Based on Figure 1, the following reasoning leads to the final formula:

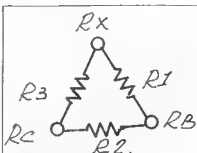


Figure 1.

$$R1 = RX + RB$$

$$R2 = RB + RC$$

$$R3 = RC + RX$$

$$RX = R1 - RB \text{ and } RX = R3 - RC$$

$$2RX = R1 - RB + R3 - RC$$

$$2RX = R1 + R3 - (RB + RC)$$

$$\text{As } R2 = RB + RC$$

$$2RX = R1 + R3 - R2$$

$$RX = \frac{R1 + R3 - R2}{2}$$

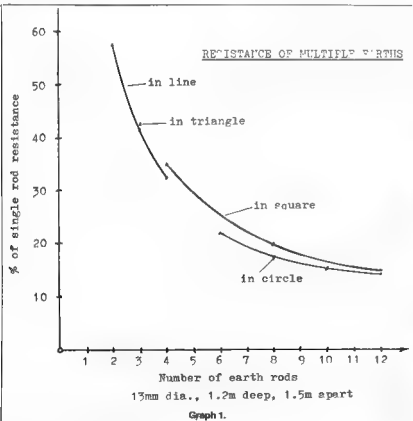
2

I have successfully used this method to measure ground conductivity of widely varying soils. In one extreme case (in far north Queensland), I found the resistance of an HV earth rod to be 3400 ohms. This effectively negated the protective ability of the HV fuse system. Even the resistance of an abandoned two inch (50mm) water bore pipe (sunk to 20 metres), gave a reading of 240 ohms! (Soils 'aint Soils, Sol! Tech Ed) These field measurements were done with a car battery, voltmeter and ammeter.

Once the resistance of a single earth rod has been established, the graph in Graph 1 can be used to estimate the effect of multiple rod earths for a number of rod configurations. It can be seen that the total resistance does not diminish in the proportion of the number of rods, and that the reduction, in absolute terms, becomes almost insignificant for more than four rods.

Diameter and depth of the rods have some effect on the earth resistance, but their discussion is beyond the scope of this general note.

Further reading on the subject may be found in the excellent book *Earth Resistance* by G F Tagg, published by George Newnes Ltd, in 1964 and, in the fundamental study by H B Dwight *Calculation of Resistance to Ground* in the *IEEE Transactions*, December 1936.



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THE LAZY PI

Lindsay Lawless VK3ANJ
Box 112, Lakes Entrance, Vic 3909

The theory of this unit is that of the L network, but the series reactance is divided.

The centre fed aerial with tuned feeders is probably the best solution for amateurs requiring an all band HF aerial system, tailored to fit a suburban or country house block. The aerial and feeders of these systems can be any length to suit the block and building layout. The lack of resonant lengths is corrected with an Aerial Coupling Unit designed to match the 50 ohm unbalanced transmitter output to the balanced feeder input.

I have constructed an ACU which is simple and suits my situation; it could be useful for others with similar problems.

The theory of the unit is that of the L network (Figure 1), but the series reactance A is divided to suit the block and building layout. The modified version needs a name — I suggest Lazy Pi(F).

The transmitter is coupled to the ACU by a 50 ohm to 50 ohm balun or a 50 ohm to 200 ohm balun via 50 ohm coaxial cable, any length. If the input to the ACU is through terminals a-a, it will match a resistance N times the output resistance of the balun (50N or 200N). If the ACU is reversed and the terminals b-b used as input, the unit will match resistance 50 divided by N or 200 divided by N.

The reactances must be opposite kinds; it is most convenient to make B a variable condenser and A a tapped inductor. To match resistance R_s greater than the balun resistance R_b , the reactance of A must be:

$$X_A = R_b \sqrt{N-1}$$

and the reactance of B:

$$X_B = R_b N / \sqrt{N-1}$$

where

$$N = R_s / R_b > 1$$

To match a resistance less than R_b , the reactance of A must be:

$$X_A = R_b \sqrt{N-1} / N$$

and the reactance of B:

$$X_B = R_b / \sqrt{N-1}$$

where $N = R_s / R_b > 1$

Component B in my unit is a variable condenser, 30 pF to 240 pF supplemented with two fixed condensers, 150 pF and 400 pF switched in parallel as required. This provides three capacity ranges 30 to 240, 180 to 390, and 430 to 640 pF. With this capacity range and 50 ohm input to a-a it is possible to match resistances from 70 ohms to 2000 ohms and with a 200 ohm input to b-b matching loads as low as 5 ohms is possible.

There are complications.

a The feeder input impedance will be complex and the reactive component must be included in A when R_s is larger than R_b , and in B when R_s is less than R_b .

b The Q of the circuit is low ($Q = (N-1)^{1/2}$) and therefore it is not very effective at suppressing out of band emissions.

c Suitable switches for the switched tap inductance may be difficult to find. Mine is from a WWII transmitter.

Trial and error adjustments of L and C in the Lazy Pi aided by the choice of two transmitter output impedances will get results in most

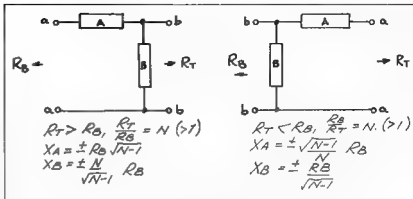


Figure 1 — Basic L Network.

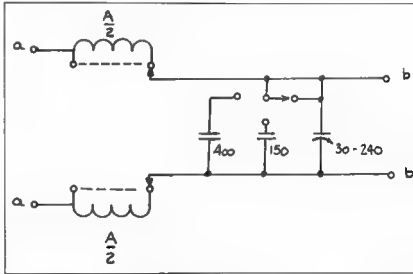


Figure 2 — Balanced L.

cases. If it is difficult to get a good match on some bands it may be necessary to sacrifice some environmental considerations and alter aerial and/or feeder lengths to achieve manageable impedances on all bands. The 'named varieties' of the centre fed tuned feeder systems do this but unfortunately their solutions apply to a limited number of situations.

A home station all HF band aerial system ideally, should be a planned design integrating all elements into the environment. To do this properly, calculations of feed point impedance for various physical arrangements should be the starting point; this is a very tedious task, hopefully a WIA member will devise a simple method for inclusion in a future paper. For those interested I recommend a paper by Brian Austin ZS6BKW, in *Radio Communications*, August 1985.



NO OBJECTIONS

The Department of Communication has recently received a number of inquiries as to whether, under the Radiocommunications Act 1983, a non-amateur while studying for their amateur qualification can possess an amateur transceiver for use of the receiver section only.

It is advised, for the interest of all WIA members, that as it is the persons ultimate intention to make transmissions technically they could be considered to be in possession for the purposes of operation. This is an offence under Section 23 of the Act. The Department, however, recognises the practicalities of the situation. Consequently, there are no objections to such operations providing that the transmitter section of the transceiver is disabled in a manner which is not quickly restored (ie removal of the output valves, etc).

Before Valve Amplification — Wireless Communication of an Early Era

Lloyd Butler VK5BR

18 Ottawa Avenue, Panorama, SA 5041

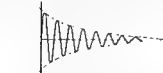
At the turn of the century there were no amplifier valves and no transistors, but radio communication across the ocean had been established. Now we look back and see how it was done and discuss the equipment used.

In the complex electronics world of today, where thousands of transistors junctions are placed on a single silicon chip, we regard even electron tube amplification as being from a bygone era. We tend to associate the early development of radio around the electron tube as an amplifier, but we should not forget that the pioneers had established radio communications before that device had been discovered. This article examines some of the equipment used for radio (or should we say wireless) communications of that day.

Discussion will concentrate on the equipment used and associated circuit descriptions rather than the history of its development. Anyone interested in history is referred to a thesis *The Historical Development of Radio Communications* by J R Cox VK6NU, published as a series in *Amateur Radio*, from December 1984 to June 1985.

Over the years, some of the early terms used have given way to other commonly used ones. Radio was called wireless, and still is to some extent. For example, it is still found in the name of our own representative body, the WIA. Electro Magnetic (EM) Waves were called hertzian waves or ether waves and the medium which supported them was known as the ether. A tuning coil was called a jigger and a capacitor was a condenser. A wireless operator was known as a Sparks and we now seem to have graduated from cycles-per-second to Hertz.

Some of the explanations given in the text are modified extracts from references used and some licence is taken in using terms, both old and new.



A Damped Oscillation in a Single Circuit.



Figure 1 — Oscillogram of Damped Electric Spark Waves.

DAMPED WAVE TRAINS

Signals generated for transmission of wireless telegraphy, in the early years, were in the form of Damped Wave Trains, as illustrated in Figure

1. A tuned circuit, coupled to the aerial was shock excited into oscillation by rapidly discharging a capacitor, part of the tuned circuit, at repetitive intervals, usually corresponding to a repetition rate equal in frequency to a sound in the human hearing range. For each discharge, a wave train was generated, decaying in amplitude as each resonant cycle transferred energy to the aerial. The resonant frequency of the tuned circuit, partly formed by the aerial, set the frequency of transmission.

On reception, the detected output either actuated a telegraph recording device or was coupled to a telephone receiver to generate an audible buzz at a frequency related to the wave train repetition rate.

The reason for generating damped waves can be appreciated when thought is given to what is needed to generate continuous waves. To generate these, the energy lost in the tuned circuit must be continuously replaced at each cycle, these days achieved by feedback through an amplifier, the device the pioneers did not have until DeForest developed the triode valve. Notwithstanding this, the pioneers did find ways of generating continuous waves, without valves, as we shall see later.

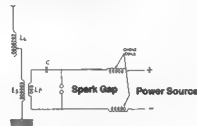


Figure 2 — Basic Spark Transmitter.

Returning to our damped waves, the basic circuit for generating these is the spark transmitter, see Figure 2. Capacitor C is charged from the power source until it develops a voltage sufficient to break-down the spark gap. At this point in time, capacitor C is connected, via the spark gap, across primary inductance L_p and its energy is released to the tuned circuits made up of C , L_p , L_s and the aerial reactive components. The damped wave train is commenced as energy is continuously lost in radiation via the aerial. The wave train repetition rate is controlled by the time constant of the charge circuit, largely the capacitance of C and the impedance of the choke coils and power source.

QUENCHED SPARKS

In the design of spark transmitters, a great deal of attention was given to quenching of the spark, that is the spark had to be quickly extinguished once the tuning system had been set up in oscillation. The reason for this can be explained by considering the theory of mutually coupled tuned circuits. If two circuits, tuned on the same frequency, are coupled together and set in oscillations, energy is transferred from one to the other to an extent determined by the coefficient of coupling (K). If

K is low, coupled energy is small and one resonance occurs at a common resonant frequency. If the coefficient of coupling is increased beyond a value, called critical coupling, two resonant peaks occur (refer Figure 3).

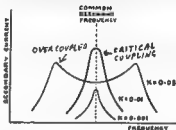


Figure 3.

Referring again to the spark transmitter circuit of Figure 2, there are two tuned circuits mutually coupled, one formed by the transformer primary L_p and its resonating capacitor C and the other formed by secondary L_s and the aerial circuit reactance. Tight coupling beyond critical value is necessary to ensure maximum transfer of energy from primary to secondary and hence there are two resonant frequencies which can be transmitted.

Returning to the discussion as the spark quench, this in effect disconnected the primary tuning capacitor from the transformer primary immediately following the spark discharge, so that resonance occurred singly in the aerial resonant circuit to prevent transmission of a second frequency.

A further function of the spark quench was to improve the efficiency of the circuit. If the spark has been allowed to be sustained during the whole oscillation train, additional power would have been lost in the primary circuit through the spark gap.

SPARK TRANSMITTERS

High power spark transmitters were used for many years in wireless stations on shore and on ships. Some transmitters were still in use as emergency equipment on-board ships in the years well after World War II.

There were a number of variations in spark transmitter designs on the method of charging the capacitance from the power source, the type of power source and the method of quenching the spark gap. We shall discuss a number of these.

THE INDUCTION COIL

The induction coil was used as the power source for low power spark stations operating from dry cells or accumulators. It provided a means to generate the high voltage necessary to energise the spark gap from the low voltage battery source. A circuit diagram is illustrated in Figure 4.

An induction coil consists of a primary coil of thick wire wound with a number of turns on an iron core composed of a bundle of soft iron wires. The secondary consisted of many turns of fine wire so that a very high voltage step-up was achieved in series with the primary winding was the interrupter consisting of a soft iron armature, secured to the top end of a flat

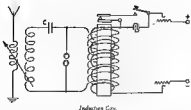


Figure 4.

steel spring whose tension could be adjusted by means of an adjusting screw. Action is as follows.

When the key is pressed, a current flows through the interrupter contacts and the primary winding. The core is magnetized and the armature is attracted to it. The contacts are therefore suddenly separated and the current through the primary rapidly falls to zero. As soon as the primary current has died away, the armature is released and contacts are again made, re-organizing the primary to repeat the cycle of events. The cyclic time constant sets the spark train repetition rate.

Across the contacts, a time capacitor controls the rise and fall of current to reduce arcing across the contacts and improve circuit operation.

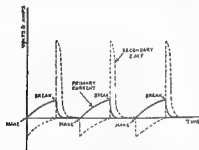


Figure 5.

At contact break, a high voltage is developed in the secondary coil as shown in Figure 5, and this is used to charge capacitor C for the initiation of each spark discharge and start of a wave train.

ALTERNATOR AND TRANSFORMER SYSTEM

The most universal practice for energizing spark oscillating circuits of half-kilowatt spark transmitters and larger units, was to use an alternator or rotary converter with its AC output voltage stepped-up via a transformer to a value sufficient to break down the spark gap.

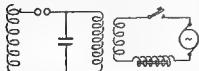


Figure 6 — The Alternator and Transformer System.

A typical energizing circuit is shown in Figure 6. The inductance in series with the alternator controls the power taken from the alternator and together with the tuning inductance, limits the charge rate of the capacitor.

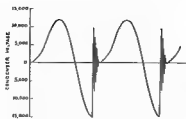


Figure 7 — Spark Train Frequency.

Depending on the adjustment of the spark gap relative to the AC voltage applied, either one spark per half AC cycle or one spark per one AC cycle, takes place. This is illustrated in Figure 7. The spark train repetition frequency is therefore either twice the alternator frequency or equal to the alternator frequency.

A number of methods have been used to quench the spark. On some transmitters, a special quench gap was used which rapidly cooled the spark. The spark gap was broken up into a number of very short gaps in series and used electrodes made of metals which were good heat conductors, coupled to radiating fins to dissipate the heat to the surrounding air. Forced air cooling was also sometimes used.

Another method was to use a rotating spark gap consisting of a metal wheel carrying a number of studs or spokes projecting from its edge and which rotated between two fixed spark electrodes so that the spark duration was controlled.

Rotating spark gaps were classified as either synchronous or asynchronous types. The synchronous type was coupled to the shaft of the alternator which supplied power to the oscillating circuit so that the spark was synchronous to the alternator frequency and phased to coincide with maximum voltage across the charging capacitor in the tuned circuit.

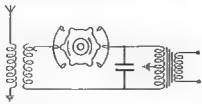


Figure 8 — Asynchronous Rotary Gap.

In the asynchronous type, as shown in Figure 8, the speed of rotation of the gap was independent of the speed of the alternator. In this system, some sparks were missed when timed at the low voltage phase of the alternator cycle, refer to Figure 9. The advantage of this system, however, was that the alternator could be run at a lower frequency than the wave train

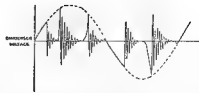


Figure 9 — Condenser Voltage with Asynchronous Rotary Gap.

repetition frequency, the latter being controlled by the rotating gap rather than the alternator speed.

In transmitters which employed no special spark quench circuit, it was necessary to reduce coupling and detune the aerial circuit to prevent transmission of two frequencies. This was done at the expense of reduced power output coupled to the aerial.

Examples of quench gap (QG) transmitters are shown in Figures 10, 11 and 12.

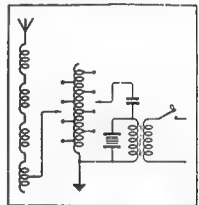


Figure 10 — Siemens 1/4kW QG Transmitter.

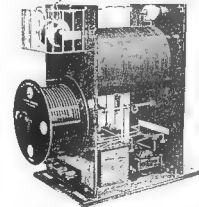


Figure 11 — Radio Communication Co., Type T24, 1/4kW QG Transmitter.

WIRELESS TELEGRAPHY RECEIVERS

This segment will examine some of the devices used to detect the transmitted signals. There were no amplifying devices as they are known today, and the signal level fed to the detector was that received from the aerial system. The detector was connected via a single tuned circuit and hence selectivity to reject unwanted signals, close in frequency to that being used, was low.

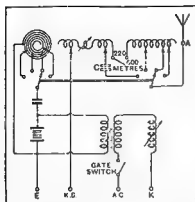


Figure 12 — Wiring Diagram of 359 QG Transmitter*.

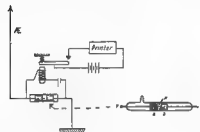


Figure 13 — Filings Coherer and Receiving Apparatus*.

FILINGS COHERER

The earliest form of detector to give good results was the filings coherer, so named because of the discovery that in the presence of a high frequency alternating current, metallic filings tend to cling together or cohere.

The coherer is illustrated in Figure 13. The small glass tube is exhausted of air. The terminals TT are connected to silver plugs SS, which are separated by the nickel and silver filings. A DC circuit connects the coherer to a relay which controls a Morse ink or relay. The coherer is also connected via the tuning system to the aerial. With no signal input from the aerial, the filings have low conductivity, but when a signal from the aerial flows through the coherer, the filings cohere and increase conductivity so that the relay is energized.

A problem with the coherer was that after each wave train had passed through it, the device had to be de-cohered by means of a tapper to shake-up the filings to restore low conductivity. The apparatus to do this is not shown in the diagram. A further problem was that the coherer was easily upset by atmospheric static.

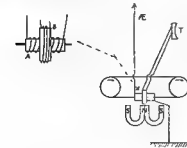


Figure 14 — Magnetic Detector*.

THE MAGNETIC DETECTOR

Marconi is accredited with having made a great advance in detection with his invention of the magnetic detector, refer Figure 14. Two mutually coupled coils are located in the static magnetic field of a permanent magnet. One coil (A) is connected via the tuning system to the aerial and the other coil (B) is connected to the telephone receiver. The magnetic field is concentrated by an endless band of iron wire which passes through the coils and during operation, rotates continuously through them. Operation is as follows.

When a magnetic field is removed from soft iron, there is a lag in the collapse of the field or what is generally called hysteresis. Because of this effect, the magnetic field in the wire is dragged along, past the normal field of the magnet, by the movement of the

When a signal is received, a high frequency alternating magnetic field is developed from signal current in coil A. This reduces the hysteresis effect and hence increases the strength of the field from the magnet passing through coil B. A change in field strength through coil B develops a voltage at B so that each time a wave train is received, the telephone receiver is actuated, generating sound.

The maggie as this detector was called, was a decided improvement over the filings coherer and was used as standard Marconi equipment for many years. Though not more sensitive than the coherer, it was rugged, reliable and much faster in operation.

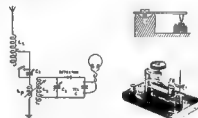


Figure 15 — Crystal Detector.

THE CRYSTAL DETECTOR

A further development was the mineral or crystal detector consisting of a piece of crystalline carborundum or crystal-line silicon with a metal point contact as shown in Figure 15. This device conducted current more readily in one direction than the other and was the forerunner of the modern point contact semi-conductor diode, the operation of which is now explained by solid state theory.

Every amateur radio enthusiast knows how a crystal radio receiver operates. Rectification by the crystal detector produces an RF component superimposed on a DC component. When the amplitude of the RF signal varies with modulation or the spark wave train, the DC component changes with it. A low pass filter formed by the headphone impedance and a by-pass capacitor removes the RF component leaving the demodulated signal which drives the headphones.

Another way to explain the process is to consider the RF signal as a carrier plus sideband components. If these are fed through a non-linear device, such as our detector, different components between the carrier and the sidebands are produced which are separated from the RF frequencies by the low pass filter. These demodulated components are, of course, audio frequencies related to our

spark train repetition frequency or speech in the case of a radio telephony signal.

Another device used by the pioneers was the electrolytic detector. This also operated in a non-linear mode in that its resistance varied as a function of the signal current fed through it. This device will be considered further when reception of radio telephony is discussed.

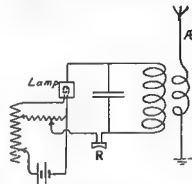


Figure 16 — Fleming Valve Detector.

The last receiver circuit for the present, shown in Figure 16, uses the Fleming valve detector, or as we know it, our diode valve detector. It was Edison who first discovered that if a heated element and a metal plate were both placed in an evacuated envelope, current would flow in one direction, but not in the other. The diode valve was first used by Fleming for rectification in the detection process and it remained as a widely used detector in TRF and super-heterodyne receivers of a later era, until semi-conductor devices replaced valves as amplifiers and rectifiers.

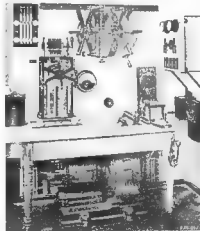


Figure 17 — Standard Ship Set, Antenna Energy 1.5kV. Telefunken System*.

WIRELESS INSTALLATIONS

This section will examine some early wireless station installations shown in Figures 17-23. A typical early ship installation is shown in Figure 17. In general, ships operated on frequencies below one megahertz in what is known today as the medium frequency (MF) band. For long distance communication frequencies as low as 30kHz (approximately 9000 meters), were used in the now low frequency (LF) band. Figure 23



Figure 18 — Very Small Portable Wireless Station¹.



Figure 19 — Interior of Station at Suva, Fiji Islands¹.

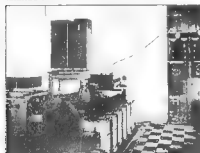


Figure 20 — The Rotary Spark Gap, Oscillating Transformer, and Inductance, Athens Station¹.



Figure 21 — A Portable Field Station for Cavalry².



Figure 22 — The Las Palmas Station².



Figure 23 — Wireless Aerial on a Submarine and HMS DRAKE².

illustrate the massive aerial systems needed to operate at these long wave-lengths.

Figure 18 shows a low power portable wireless station using an induction coil as the spark transmission source. Figure 20 is an interesting photograph of a portable field station for cavalry. It has a dynamo driven by a petrol engine mounted on a saddle.

An early submarine filled with a large aerial structure is shown in Figure 23. According to the source from which this was obtained, the structure had to be collapsed when the submarine was submerged.

CONTINUOUS WAVES

Methods for generation of continuous waves were first discovered by Professor Elihu Thompson and ultimately developed for wireless telephone purposes by Professor R A Fessenden using a high frequency alternator coupled directly to the aerial system. Development of special alternators was carried out by a Swedish engineer EFW Alexanderson.

The original alternator supplied power of about one kilowatt at a frequency of 80kHz. Around the period of World War I, alternator transmitters had been built and put into commercial operation with power as high as 200kW. This was high power by any standards.

The discovery of the singing arc by Duddell in 1900, opened up a new and promising field for continuous wave transmission, especially for telephonic purposes. He found that under certain circumstances, the electric arc could be set in a state of continuous high frequency oscillation, the frequency depending on the proportion of inductance and capacity inserted in a branch or short circuit of the arc, refer Figure 25. Burning in air, the frequency was limited to about 40kHz maximum and the system was further developed by Poulsen who discovered that the frequency could be raised by forming the arc in hydrogen or hydrocarbon gases under high pressure. Cooling one of the arc poles with water to keep it cool was also found to be important.

The gases were used because of their high heat conducting power and to make the cooling effect still greater, the arc was formed between

the poles of a strong electro-magnet. By repulsion of the electrolysed gas, the magnetic field caused rapid circulation of the gas around the electrodes. Using the Poulsen system, frequencies as high as one megahertz were achieved compared to 100kHz for the alternator system.

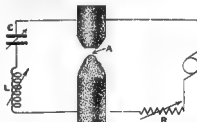


Figure 25 — Arrangement of Duddell ARC. There are really two circuits in this arrangement, one carrying oscillating, the other direct current. Direct and alternating current are carried at the same time by the arc and the carbons, and all the constants in the circuit being correct the arc A will give a musical note.

Again referring to Figure 25, the action of the singing arc is explained by Dr J A Fleming, as follows.

If a condenser in-series with an inductance of low resistance is placed as a shunt across the arc, the first effect is to rob the arc of some current to charge the condenser. This action, however, does not decrease, but increases slightly the potential difference of the carbons. Hence the condenser continues to be charged. When the charge is complete, the current through the arc is again stationary and the condenser at once begins to discharge back through the arc. This however increases the current and decreases the potential of the carbons, hence the action proceeds until the condenser is discharged.

In the circuit these are really two circuit paths, one carrying an oscillating current and

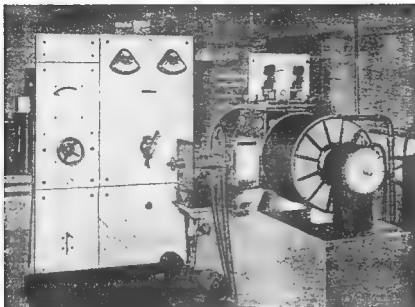


Figure 26 — The Eiffel Tower Arc Transmitting Station. On the right is the Poulsen 50kW arc transmitter. The powerful electro-magnets are used for steadying the arc. To the left of the machine is the control panel. The electrodes of the arcs consist of a carbon cathode and copper anode. The electrodes are in a water-cooled chamber²⁹.

the other a direct current. The former is the circuit CLA, whilst the latter is the circuit of the generator and RA. The arc A thus carries both direct current and high frequency alternating current at the same time.

The actions of the singing arc are also explained by Duddell to be dependent upon the fact that the arc itself must be regarded as having a negative resistance. That is to say, that at any moment, the instantaneous change in volts divided by the corresponding instantaneous change in amperes in the circuit ACL, must be a greater value than the resistance of the circuit and negative in sign, so that in each cycle the current builds up whilst the voltage decreases. These same conditions are, of course, necessary to maintain continuous oscillation in any oscillating circuit, be it valve, transistor or whatever.

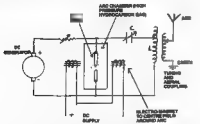


Figure 27 — Poulsen-type Arc Transmitter³⁰.

The circuit of a Poulsen arc transmitter is shown in Figure 27, and a typical installation in the Eiffel Tower in Paris is shown in Figure 26.

WIRELESS TELEPHONY

The wireless telephone transmitter used by Professor Fessenden is illustrated in Figure 28.



Figure 28 — Transmitter Station, Fessenden's Wireless Telephony³¹.

The carrier frequency is generated from a high frequency alternator and amplitude modulation of the continuous waves is achieved by passing the aerial current through a solid back carbon granule telephone transmitter so constructed that it could carry a very heavy current without overheating. Sound at the telephone-transmitter diaphragm varied the resistance of the granules and hence the loss resistance in the aerial circuit.

In one form, the heat generated was dissipated by constructing the carbon chamber with two deep grooves so as to obtain a large air cooling surface. In a later and more satisfactory form, called the trough transmitter, the same objective was achieved by circulating water through a water jacket surrounding the carbon chamber. This form, shown in Figure 29, could carry as much as 15 amps of RF current continuously.

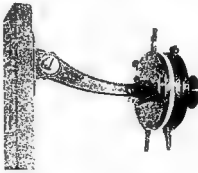


Figure 29 — Fessenden's Trough Carbon Transmitter³².

Another form of transmitter used with considerable success was the *majorana* hydraulic transmitter. The operation of this was based on the capillary properties of jets of liquid and the device was made up of a small glass tube from which spurted a jet of scudulated water under steady pressure. The glass tube was connected to the diaphragm of the transmitter with an elastic envelope and the jet of water fell between two platinum plates. With a steady jet, there was constant resistance between the plates, but if the diaphragm was made to oscillate from a sound source, the resistance between the plates, controlled by the jet, was varied.

Other wireless telephony systems have made use of the singing arc. Professor Ruhmer used a series connection of 12 arcs, each having a carbon and copper pole, the latter being kept cool by circulation of water inside. The arcs in this case were not enclosed; or under pressure. The arcs were operated at a current of four amps, at a voltage of 440 volts and the operating frequency was 400 kHz. Figure 30 shows the transmitter system used. The 12 series arcs are shown as one in the diagram. Amplitude modulation is achieved by coupling the output of a carbon granule telephone transmitter into the arc circuit via a transformer in order to modulate the current through the arc.

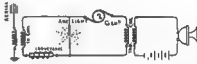


Figure 30 — Singing Arc Method of Transmission³³.

It is difficult to understand how the low power output of a carbon transmitter or microphone could effectively modulate the high power of the arc, but it is claimed in reference four that comparatively small variations at the microphone cause very large fluctuations in the operation of the arcs. A later system used by Poulsen had 12 solid back carbon granule transmitters with electrical outputs connected in parallel and all fed from the one common AC output.

Another modulation system for alternator-type transmitters is briefly described in reference four. Effective amplification of the modulating signal is achieved by modulating the DC field current to the alternator which in turn, controls the AC output voltage.

Until the time when valve amplification methods became available, the power output of radio telephone transmitters was limited by the current control capability of the microphone transmitting devices. A single solid back carbon granule transmitter developed by Fessenden could vary the through current about half an ampere. The multiple parallel system used by Poulsen could vary it about 10-12 amperes. Where the device was used to modulate the field of a high frequency alternator, output powers from the alternator up to 10kW were achieved. Just how well the carrier was modulated by these systems is not clear from the references.

WIRELESS TELEPHONY RECEIVERS

Professor Fessenden is accredited with a great deal of the development of early wireless telephony systems and in his experiments, he made use of a number of different detection systems. One detector utilised the liquid or electrolytic barretter shown in Figure 31. This device consists of a small cylinder containing conductive liquid, such as nitric acid. A metal

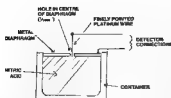


Figure 31 — Fessenden's Electrolytic Detector*.

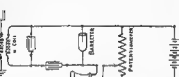


Figure 32 — Barretter Receiving Circuit, Fessenden's System*.

diaphragm, with a small hole in the centre is immersed in the liquid together with a finely porous platinum wire in the centre of the hole. The diaphragm and the fine wire are connected in the detector circuit forming the non-linear element for detection, refer Figure 32. Operation is such that the layer of liquid between the fine point and the rim of the hole forms a resistance element which varies in proportion to the intensity of the signal.

The barretter is biased with a DC current from the battery which, it is assumed, allows the barretter to be set for maximum slope in the resistance versus current characteristic. According to one reference, the detector could respond to signals of 150 microvolts.

Fessenden also made use of a thermal barretter. This was made up like an electric lamp with a very short length of platinum wire drawn to a diameter of 0.06 mil. Several of these were used in series as the non-linear element in the detection system and utilizing the principle that the resistance of the wire varied as a function of its temperature, which varied with the strength of the signal voltage across the wire.

Fessenden was able to further improve detection sensitivity by the use of his heterodyne receiver. Heterodyning means combining two frequencies to produce a third. For example, if two frequencies of 100kHz and 98kHz are heterodyned, sum and difference frequencies are produced. If the higher frequencies are filtered out, the difference frequency of 2kHz remains.

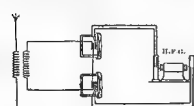


Figure 33 — Fessenden's Heterodyne Receiver*.

Figure 33 shows the detector Fessenden used. The two telephone receivers, or headphones each have two coils around a soft iron core. One coil is coupled to the mica

diaphragm and the other is fixed. One coil is connected to the received signal source from the aerial and the other is connected to one of the outputs of the high frequency generator (HFG), set to the same frequency as the incoming carrier.

Operation of the heterodyne receiver appears to be as follows:

With no modulation, the diaphragm, due to its inertia, does not follow the high frequency signal and, in any case, the signal could not be heard by the human ear. With modulation, sideband component frequencies are received and the summed magnetic field causing attraction and repulsion between the two coils and moving the diaphragm, contains a component which the diaphragm can follow equal in frequency to the difference frequency of the sidebands and the high frequency generator. This difference component is of course our demodulated speech or telephone signal.

Other detectors used for wireless telephony were the crystal detector and the Fleming valve detector, both previously described.

Whilst commercial wireless telephony became well established without the amplifier valve, early wireless telephony appeared to be mainly experimental until the introduction of the amplifier valve allowed further development of commercial voice communication and radio broadcasting.

FINAL

The era of wireless communications discussed here is barely a lifespan past. The electronics world without computers, integrated circuits, transistors and valves has been covered. At the time, the potential uses of the ionosphere and the higher frequencies had still to be discovered. Old-hat technology perhaps, but the foundation of an almost explosive advance in electronic technology which has now dominated our lives in almost any place we work and in our homes.

The older we get, the more we seem to enjoy researching the past. Preparation of this material has been an interesting exercise, perhaps you have found it interesting too!

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- 1 Wireless Telegraphy — Simply Explained H T Davidge 1912
- 2 New Harmsworth Self-Educator Early 1900
- 3 Harmsworth Wireless Encyclopedia 1923
- 4 The Practical Telephone Handbook J Poole 1912
- 5 Handbook of Technical Instruction for Wireless Technicians H M Cornwall & E O Waller 1942
- 6 Handbook of Wireless Telegraphy H M Admiralty 1936
- 7 The Historical Development of Radio Communication J R Cox VUKIM, Amateur Radio, December 1964 — June 1965
- 8 Continuing series
- 9 From Spark to Satellite — A History of Radio Communication Stanley Letwin 1979

AR

WONDERS OF MORSE

In recent Pat Hawker G3VA columns attention has been drawn to the remarkable and unique value of Morse code in enabling badly handicapped people to communicate in equal terms with those more fortunate than themselves. The degree to which this is truly the case is well illustrated in correspondence from Bob Smith G6TQ and B J Frost G6JTN.

G6TQ describes a project in which he, RAIBC and the West Kent ARS have been involved in for the past two years, and which has been described in a new book *Computer Help for Disabled People*.

This project centred on a young man, Mark Brown, 22-year-old confined to a wheelchair, blind, profoundly deaf and, due to his deafness from birth, with a severe speech impairment. Yet Mark has achieved an ability to copy Morse.

G6TQ says: "We talk to him at 25 to 30 WPM, but he can read at virtually any speed. He is unable to write and just reads it in his head like a book. This is achieved by a wheelchair-borne micro-computer which is programmed to translate plain language typed on the keyboard into fast Morse. This he reads through earphones by bone conductivity, as he can sense the vibrations."

As a result of Mark's new interests, he has put weight on his frail body, and has become more alert and lively. V/a his keyboard he can talk to anybody.

G6JTN reports similarly on successful work with the deaf. His project commenced when he developed an deal for the family of a totally deaf girl to enable them to call her from within the confines of a house and garden. This aid comprised a low-power receiver used in conjunction with an indication device mounted on the girls spectacles. Her mother was then able to call her from a simple base transmitter using either simple pre-arranged codes or their pre-existing knowledge of Morse Code.

Work then continued with a two-way aid intended for a similar application or for use by two totally deaf persons and consists of identical transceiver-type units in conjunction with a wristwatch-mounted indicator and push-button. When one person wishes to call the other, a single press of the button causes a motorised vibrating device to be activated. Two-way communication can then continue using the indicators and buttons based on either pre-arranged or Morse Code.

Condensed from Radio Communication, May 1986

RESIN MOULDED TRIM POTS

The miniature VTL type resin-moulded trimming potentiometers offer an alternative to cermet film trim-pots.

Because of the moulded construction, they offer good resistance to solder heat and flux interaction.

Resistance values range from 200 ohms to 1M ohm and pin spac ng is based on the industry standard 5 mm grid.

Adapted from Electronic News, p31 — April 1986



QSP

DOC STATISTICS as at March 1986

AMATEUR LICENCE TOTALS	ACT	NSW	VIC	QLD	SA/NT	WA	TAS	TOTAL
STATIONS/SERVICE	354	4848	4557	2601	1962	1439	568	16290
— Beacon	2	22	12	23	6	23	2	92
— Limited	55	847	1026	352	294	215	107	2891
— Limited/Novice	17	325	310	225	149	90	38	1153
— Novice	51	914	775	912	385	216	96	3649
— Unrestricted	179	2760	2440	1369	1128	894	345	9115
WA Members Percentage	228	2237	2300	1262	1025	724	316	8112
	75	46	50	48	52	50	55.3	49.76
CIGRS								
— 27 MHz	385	28903	29945	26187	13315	10242	3951	117708
— UHF	113	13168	12911	15378	13824	6799	2098	64091
Repeaters								
— Amateur	2	42	49	29	14	13	11	160
— CIGRS	-	27	17	34	15	14	8	115

Cartoon courtesy The Propagator



This is a program for a station log for the Commodore 64 which many amateurs may find useful to have in the shack.

STATION LOG

Joseph Ortuso VK7NJO
43 Bayfield Street, Bellerive, Tas. 7018

```

5 PRINT"J"
10 PRINT"      A STATION LOG PROGRAM FOR THE":PRINT
15 PRINTTAB(13)"COMMODORE 64":PRINT
20 PRINT"      WRITTEN BY JOSEPH ORTUSO":PRINT
30 PRINTTAB(16)"VK7NJO"
50 FORI=1TO2000:NEXTI
110 DIMN$(1000)
120 C=0:I=1
130 READN$(I)
135 IFN$(I)="END"THEN160
140 C=C+1:I=I+1
150 GOTO130
160 PRINT"J"
170 INPUT"ENTRY PLEASE";E$:PRINT"J"
180 FORI=1TOC
190 IFE$="LIST"GOTO210
200 ILEFT$(N$(I),LEN(E$))<>E$ANDRIGHT$(N$(I),LEN(E$))<>E$THEN220
210 PRINT"  I"■:";N$(I)
215 PRINT
220 NEXTI
9000 DATAVK2D0Z JOHN SSB 57/59 SYDNEY 090386
9001 DATAVK2VDX JOHN SSB 57/59 80MT.SYDNEY TS520S INVER.V DIPOLE 090386
9002 DATAVK2NZL JOHN SYDNEY 090186
9003 DATAF6FGY JACQUES MOBILE 10MT.SSB GMT 0701 270380
9004 DATA11TYU ARMANDO MOBILE/MARINE 15MT.SSB. SOUTH CHINA SEA 020980
9005 DATAK2GHW 100580,GM4JLD 060580,DF6TR 080480,VK2VDX 130280,G4DV 030480
10000 DATAEND
10010 FORN=1TO40:PRINT"";:NEXTN
10020 PRINT" TOTAL:";"C"■:";NEXTEXT  ■ADOD  ■QUIT"
10030 GETG$:IFG$=""THEN10030
10040 IFG$<"N"ANDG$<"A"ANDG$<"Q"THEN10030
10060 IFG$="A"THENLIST9000-10000
10070 IFG$="Q"THEN PRINT"J":END
10080 RESTORE:GOTO160

```

This station log program has excellent features for its relatively simple structure and it has been found to be more useful than most others, especially when the writer did not possess a disk drive

FEATURES

In order to view a specific contact, you may enter the full call or just a few letters of it or the date. This is a very useful feature. For instance, if you require to know how many VK7s you have worked you just input VK7 and the screen will scroll with all the VK7 contacts. Or you may wish to find out how many stations you have worked

If you need to find out how many contacts you have made in, say 1982, just input 82 and all the 1982 contacts will be displayed.

The program also has two counting routines,

the first keeps count of your entries and numbers each one with the corresponding number; the second keeps adding them and prints out the total.

It may be noticed the way that data has been deliberately entered in a non-organised fashion, as an example to show that it is not necessary to follow any structure (which is usually annoying and time consuming when entering large amounts of data).

The only points to remember are that the call sign is to be entered first and the date last.

The program has been used very successfully initially with the datasette and now with a disk drive.

The program will also work with the VIC-20, as it was originally designed for this unit, but some re-formatting will be necessary.



QSP

BY-LAWS

Amateurs in Westmount, Canada, assisted by CRRLE Course! Bob Benson, QC, VE2VW, were successful in having the following provision included in a by-law that will regulate the size and placement of antenna structures in their municipality.

This by-law shall not apply to any antenna forming part of a federally-licensed structure.

It was not an easy victory. For two years, the amateurs lobbied the town council and worked to improve public relations. It was important to get the provision in. The by-law limits the horizontal component of antenna structures to 10 feet (3m). That would have eliminated all HF beams — and even wire antennas!

From CRRLE News, 9th Apr 1986.

PROPHECY FROM THE PAST

Alan Shawsmith VK4SS
Queensland Historian
35 Whynot Street, West End, Qld. 4101

A prophetic look forward from 50-years back!

My YF sat slowly turning the pages of old *Amateur Radios*, digging ever deeper into history. I was supposed to be writing but my mind was occupied with the Jim Linton/Roger Harrison paper on *Future Trends*, particularly the concluding comment, "... that amateur radio's future lies in information systems and high speed data transfer."

There-in was my mental sticking point — somehow I just could not buy it. I yearned for the Nostradamus gift of prophecy.

After 50-years of amateur radio involvement, wouldn't it be comforting to be able to predict our *Future Trends*. I thought of all those past revealers who had had the temerity to be prophetic about wireless — and had finished with egg on their faces. A few instances are:

Hertz demonstrating that 'ether waves' travel only in straight line (Marconi proved him wrong), De Forest, on record as saying that the transistor would never have a place in radio; the 'pundits' who claimed SW was useless for DX, and the endless number of 'nafs' who have been saying for 60-years that Morse would be dead in a decade or less (actually there is more CW activity now than there was 12-months ago and it is not because of low solar activity).

I was brought back to reality by a tap on the arm. The YF handed me a tatty old *Amateur Radio* magazine, dated 1st September 1936. "There," she said pointing to page 11, "isn't that article remarkably prophetic considering the date it was written."

Indeed it was — and here it is, full text:

HAM RADIO IN 2036 — (A PROPHECY) by Ron Glasco VK2RF (now VK4BG)

Jim leaned back in his shack chair; removed his cane and massaged his ears gently to restore circulation. He felt very pleased with himself, by which you might guess the rig had been getting out of his satisfaction. A glance at his log would have confirmed your judgment. Six QSOs including four continents, not to mention a number of all worked within two hours, was the tale it told. What ham with a license dating back three months would not have felt equally pleased?

A clock struck in the next room with a single reverberating stroke. Jim gave a start at this intimation that the time was 1 a.m., and only then began to realise how sleepy he felt.

A fire still smouldering in the comfortably warm shack, and Jim settled a bit lower in the chair, half closed his eyes, and let his thoughts roam unhindered. And as anyone can guess, he was thinking about how good he was at working DX.

"Not such a bad effort," he thought, "with all reports T8 or 9 and at least 10. These electronic-coupled oscillators can push out a good note if you go about it in the right way. Wonderful the advances made in the game in the last few years. I suppose if a fellow had worked that string I got tonight about 15-years ago they'd have thought him a marvel; but when you look at it that way, I suppose that I'd open my eyes if I could see a ham station of the future. Say a hundred years from now. A hundred years — a hundred years."

"A hundred years," a voice was saying, as Jim opened his eyes, "that's how long you've been asleep. You've been here in the ham section of the museum all this time. I'm the caretaker, and just noticed you stirring as I was looking up for the night."

"I can hardly believe it," said Jim, "is it really 2036?"

"Yes, 2036," said the caretaker. "What a change you'll notice. They'll be asking you to give your impressions at one of the television stations in no time."

"So television is here at last," exclaimed Jim.

"Yes," the caretaker chuckled, "we don't have newspapers now. We see events as they happen all over the world. But I suppose the first thing you want to see is a ham shack."

"You bet," cried Jim enthusiastically, "you must have elaborate shacks now. Where's the nearest ham?"

"Oh, I'm a ham," remarked the caretaker, though Jim noticed that the way he said it did not appear to suggest much pride in his ham status. "I'm VK2FGK2."

"What a long call!" said Jim. "What's the idea?"

"Well, there are two million licenses in Australia now so it's necessary."

"Holy smoke. How do you get through the QRM?"

"There isn't any QRM now. Our automatic receivers can copy through any interference."

"Well, that's a help. Now where's your shack. I'm anxious to see it."

"It's on the 251st floor of this building. We used to be a lot higher, but the missus used to get nervous at the height."

"Cripes, what a skyscraper! By the way, I notice the human race hasn't changed much. All I can see different about you is that your mouth is larger, ears are flatter, and the fingers of your right hand are stumper."

"Yes, that's the effect of a few generations of hams," replied VK2, etc. (he'll call him that for short). Big mouth from talking into mikes; flat ears from wearing cans; stumpy fingers from pounding brass. However, since there's been no need to do these things we're getting back to normal."

"What!" screamed Jim, "no talking into mikes, no listening, no brass pounding. How can you possibly QSO?"

"Oh, things are much easier now. Here's the shack. Come in and see for yourself."

Jim answered, prepared to see almost anything. He would not have been surprised to see 20 large relay racks and on end, tubes four feet high, and a receiver with 50 tubes. Instead, he could scarcely repress an exclamation of disappointment at the meagre amount of gear in the room. All there was, and there could be nothing hidden, was a closed box-like affair about four feet long, two feet high and two feet deep, and a panel a yard square, covered with push-buttons, each labelled.

"Everything is in the one unit now," said VK2, etc.; "it's all automatic, and controlled from this panel."

"I see," said Jim. "How different from my old rig. Now how about some technical details? Tube line-up and all that kind of thing."

"As a matter of fact, I don't know what's inside the box. It's sealed down, and can only be opened by an Amateur Station Service man, in the employ of the World Government."

"What!" howled Jim. "You don't build it? You don't even know what's inside it?"

"No, of course I don't. You see, any form of experimenting is forbidden now. Years ago it was realised that there wasn't much left to discover; so all experimenting is now left to the Radio Development Department of the World Government. When anyone wants a ham licence he applies, pays the fee of two-shillings, and the Government sends him a rig, with a pamphlet on how to work it."

Visions of hard sweating of theory, countless hours spent copying code, the AOPC, 20-shilling fee, and the building up of his gear flew through Jim's mind. How easy it was to be a ham now. Too easy, in fact. Couldn't be so much fun in it now, he ruminated.

"When I was on the air," said Jim, "we used to get a lot of fun out of building things, having them go wrong and fixing them."

"Yes, it must have been fun," replied VK2, etc., rather anxiously, "but what we've never had we'll never miss. Like to see me have a QSO?"

"Go ahead, and you might explain things to me as you go along, like a good fellow."

"Oh, there's nothing much in it. Here's how it works. As we came through the door we broke an electron beam, and that switched things on. Now, who do you want to work?"

"Cripes, is it as easy as that working anyone you want? Well, see if you can raise an EA."

"Yes, we can raise any country at any time of the day these times. Well, to raise an EA, all I do is to press this button labelled CO, and this one EA. You'll notice that there's a button for every country, in alphabetical order. The pressing of these buttons causes an automatic CQ EA call to go out in a narrow beam straight at Spain. The box contains the antenna, by the way. The outside affairs used to get mixed up with auto. Pressing the EA button automatically points the transmitting and receiving antennas at EA."

He pressed the buttons. "The call is going out now with a thousand kilos behind it. It lasts about 15 seconds, and the transmitter automatically switches over to the receiver as it signs 'K' at the end of the call. See that light that just switched on at the bottom of the panel? That means an EA station has answered. The receiver swings around the band until it finds a station calling us. Now you'll notice the light has gone out, that means he's over and we're getting back to him. By pulling the switch we give him an over."

"Very snappy," Jim remarked, flabbergasted at the ease with which everything worked. "What do you — I mean the transmitter — say to him?"

"Oh, just 'Gm on ex lnx for call — vy psd to QSO. UR sigs hr T9 QSA5 R9 (by the way, all reports are T9 QSA5 R9 now) pse QRM? pse GSL — GRU 73 cuagn gr!'"

"Well," said Jim grimly, "I notice that rubber stamp QSOs haven't changed."

"Of course," explained VK2, etc., "by pressing this button marked 'Ragchew' we would give him a report on the weather and condx. A barometer inside the box does that. But since we were able to control the weather and make it the same everywhere it's hardly worth while. Besides, if I prolong the QSO for more than two minutes the other fellow may be annoyed."

"I see, just like that, eh?" Jim was beginning to feel annoyed at the easy way modern ham radio worked.

"Yes, there's nothing to get worried about now. By pulling this tray out of the box we find a slip which has printed on it all the other fellow said. Of course, it's the same as we said to him, so that in the rare case of any QRM we'll know what he said. In fact, I hardly ever bother to read it. By the way, as the transmitter signed sk at the end of the QSO, it automatically printed a QSL card, stamped it, and shot it down a chute to the EA's mail box. The EA will get it by the high-speed plane tomorrow morning. Now, what do you think of the way we do things, old man? Don't you wish you'd had a shack like this?"

"Not a bit of it," yelled Jim, "I wouldn't swap you for a thousand pounds. Millions of hams, practically free licences, no technical knowledge, no building up, no operating, any DX any time, why you're not a ham at all!"

"What!" yelled VK2, etc. "How dare you insult me? I'll teach you. Take that and that: and that!" He struck Jim on the head with his fist, in a frenzy of rage.

Jim opened his eyes. He was in his own shack, and his brother was standing beside him playfully tapping him on the head with a



Equipment Review

Ron Fisher VK30M
3 Fairview Avenue, Glen Waverley, Vic. 3150

KENWOOD TS-440S TRANSCEIVER



The new Kenwood TS-440S is an upgraded replacement for the TS-430S. Believe it or not, the 430S has been around for just on four years and has been best a seller for Kenwood throughout that period. Even at the end of its run, the 430S was able to compete well with their opposition. I am sure that the 440S will give other amateur equipment manufacturers something to think about.

Firstly, let's look at the 440S and its design features — later we will see how and where it differs from the TS-430S.

The 440S is a compact, 12 volt operated HF transceiver, with a 100 kHz to 30 MHz general coverage receiver. It has all mode capability for SSB, CW, AM, FSK, and FM (all standard features), and incorporates a staggering 100 channel memory system with comprehensive scanning facilities. Selectivity can be selected independently of mode if required or selected automatically with mode selection.

Frequency selection can be made via the normal tuning control or from the front panel dial up key pad. An automatic ATU which covers the 80 to 10 metre amateur bands is internally installed as a standard feature. Options include two CW and two SSB filters whilst transceiver metering now included a PEP power output indicator as well as an automatic SWR and ALC position.

Transmitter final amplifier cooling has been improved for 100 percent duty cycle for up to one hour of continuous operation. This will be of great interest to RTTY operators!

The 440S is a triple conversion system with IF frequencies of 45.05 MHz, 8.83 MHz and 455 kHz, compared to the 430S's 48.055 and 8.83 MHz with 455 kHz being used only for the optional FM unit. AM (DSB) reception with the 430 required the optional YK-88A 8 kHz filter, the 440S uses a lower grade filter in the 455 kHz IF section. Oddly, the high grade AM filter is no longer available as an option.

Receiver functions include an IF shift, RIT, and XIT (transmitter offset tuning), noise blanker, AGC switchable for fast or slow decay time (but not AGC off), an audio notch filter, a 20 dB RF attenuator and a squelch control usable on all modes.

Transmitter functions include VOX, semi and full break-in for CW operation, an audio speech processor and an automatic ATU, as mentioned earlier.

General functions include a fluorescent tube frequency display to 100 Hz, but easily modified to give a 10 Hz display.

The 440S is capable of computer interface via an RS-232C port, however, whilst the interface unit is available as an optional extra, the required software is not.

The tuning rate is 10 kHz per tuning knob revolution in 10 Hz steps. The tuning rate increases with rapid turning of the knob, but the faster tuning rate is no longer switch-selectable as it was with the 430S.

The RIT/XIT now has a separate read-out for offset and, in addition, the main frequency readout changes by the amount of the offset.

The rear panel contains a multitude of connectors and facilities. There is the usual SO-239 antenna connector, a quarter-inch jack for a key, 3.5 mm jack for an external speaker and a six pin DC power connector, all conventionally placed.

Three DIN connectors are provided for remote connections. A six-pin connector goes to the optional computer interface unit, while a seven-pin connector provides switching and ALC output for operation of a linear amplifier. A 13-pin connector

provides inputs and outputs for audio and data, as well as transceiver microphone muting — presumably used when RTTY is in operation.

The three VOX controls are on the rear panel as are input and output connectors for FSK. A spare connector is also thoughtfully provided.

You might say that this unit has something for everyone — but not quite. If you have an AT-250 automatic antenna tuner with your TS-430S and decide to retain this to use with your new 440S (after selling the 430 in Hamaday), you may be disappointed. There does not appear to be any way to interface the two units. You could say, why bother as the 440S includes the AT-440 ATU anyhow. That's right, except that the AT-250 covers 160 metres whereas the in-built unit does not!

TECHNICAL DESCRIPTION

The 440S is slightly larger than the 430S, but, even with the built-in ATU, weighs slightly less. It measures 27W x 9.6H x 31.3D cm (38 mm deeper than the 430S) and weighs six kilograms. The rear heat-sink has been increased in size and streamlined. The fan, which is thermostatically operated, is now fitted at the front of the final unit to achieve better air distribution.

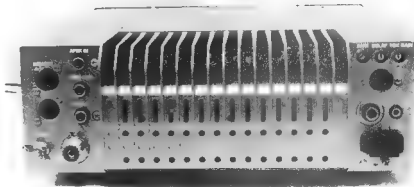
The front panel and main circuit boards are hinged to allow good access to all sections of the interior.

Reference to the block diagram shows, that after front end filtering, the signal goes straight to the first mixer, a pair of 2SK125s in push-pull. Like the 430S, it has no receiver RF stage. A similar pair of FETs are used in the second mixer, therefore, apart from the change of the first IF from 48 to 45 MHz, both units are much the same. But, from this point, things change.

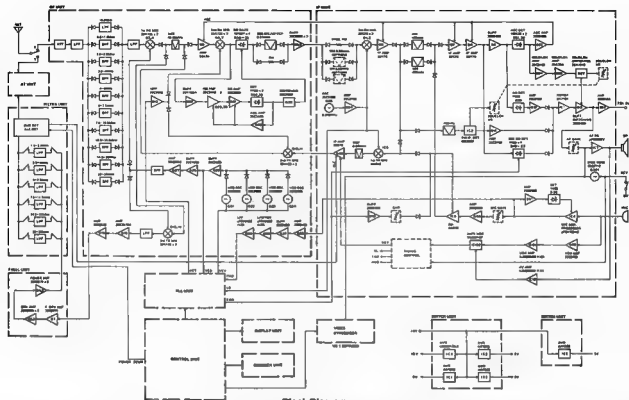
The second IF of 8.830 MHz is now reserved for the optional filters. There is a roofing filter provided with a bandwidth of about 12 kHz, but the main built-in selectivity is now at 455 kHz. With the optional 8.830 MHz filters installed, one of which, the YK-88S is the standard SSB filter in the 430S, they are effectively in series with the 455 kHz filters. In the AM and FM modes, the selectivity is at 455 kHz. Although the AM selectivity is 8 kHz at -6 dB, the same as the optional YK-88A filter for the 430S, it is much wider as we shall see later.

All mixers in the transmitter are push-pull 2SK122s with the exception of the first which is a AN612 IC.

The transmit driver and pre-driver stages use the same line-up as the 430S, but the final has been changed to two 2SC2679s. I have no data on these but assume they are up-rated over the 2SC2290s used in the 430S.



Rear view of the unit showing a multitude of connectors.



IN-AIR

In general, the TS-440S is a delight to use, however it seems that whenever a new model comes out, some of the best features of the older model get lost on the way. Let us look at them in turn.

The first thing that I noticed was the lack of a finger-hole in the tuning knob — when checking the entire tuning range for spurious signals, I concluded with a rather sore digit. Perhaps, to make up for this, the adjustable tuning knob tension is good, just rotate the ring at the rear of the knob until you have the tension you require. Personally, I would prefer a little less tension so that the knob would have more spin.

The filter switching from the front panel is a great idea, but unfortunately, as the review transceiver did not have any of the optional filters installed, selection was limited to 2.2 kHz for SSB or the wide AM position which is also selectable for HI FI SSB. (I would like to try the effect of the YK-88S SSB filter in circuit).

The 440S has only one tuning speed whereas the 430S had two selectable steps, it is possible to get a faster tuning speed on the 440S by rotating the knob at high speed, but, of course, this is not a tuning rate. (The faster rate on the 430S was most handy for AM reception).

Perhaps the most intriguing feature of the 440S is the 100 memory capability — I got up to 20 and then ran out of ideas, however, the ease of selection makes the use of the memory system almost preferable to the normal tuning. If you require a channel that is not in the memory, simply punch it in on the key pad.

Labelling of the key pad is rather dull (black on gray) so good lighting is necessary in the shack. The receiver sounded very good with typical Kenwood quality. The internal 75 cm speaker is good, but audio quality from the transceiver justifies a good external speaker.

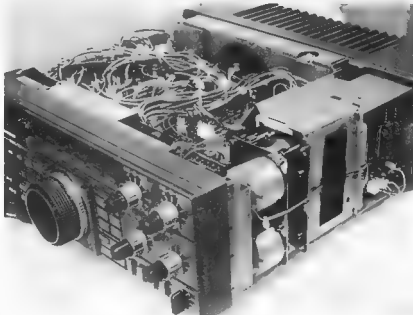
The RIT now has its own digital readout. In addition, the main frequency readout also changes with the RIT XIT (transmit offset) is also

provided. Unlike the TS-930/940, which have an offset capability of 9.9 kHz, the 440S only has a 1 kHz offset.

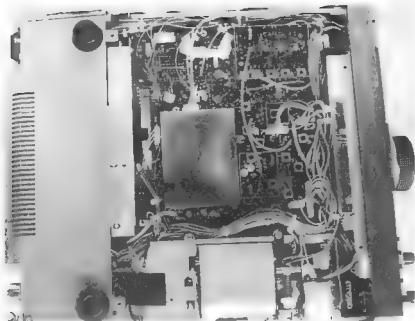
On the transmitter side, the highlight is undoubtedly the built-in automatic antenna tuner. I

would firstly refer readers to my review of the Kenwood AT-250.

Antenna tuners of the AT-250 or AT-440 type are designed to present a 50 ohm load to the transmitter from a coaxial line with a maximum



View showing the ATU in the bottom right-hand corner.



Bottom view showing the internal wiring.

SWR of about 3:1. Don't imagine that you will be able to feed a random length wire or a balanced feed antenna. However, so long as you appreciate the limitations, it will prove quite useful in many ways.

In use, the tuner was easy to use, but I found that the tune-up time was much longer than the tuner in the 930 or 940 transceivers.

New facilities have been provided for the keen CW operator. Full break-in or semi-break-in is selectable with a slide switch on the top left of the cabinet. As I must admit to not being a CW expert, all I can say is that the keying seemed to work very well.

Unfortunately, I was unable to give the FM mode an on air check due to the short time I had the transceiver. I would expect that the performance would be at least as good as the 430S, which is very good. The front panel carrier level control now operates in the FM mode so you do not have to run full power all the time as with the TS-430S.

A lithium battery is built into the 440s to retain memory and VFO frequencies when the DC supply is removed. As there seems to be some controversy about lithium batteries, it is worth noting that Kenwood recommend that the unit should be returned to a Kenwood dealer to have the battery replaced when this becomes necessary. In other words, it is not desirable that you should attempt to do this yourself. It appears that the transceiver will still operate without the lithium battery, but it will naturally not retain memories after it is switched off.

I think we will have to wait for a few years yet to find out the full effect, or otherwise, of these batteries.

Finally, in common with all current Kenwood gear, a voice synthesised frequency readout is available as an option. This along with the CW mode identification will be boon to sightless operators.

UNDER TEST

The following equipment was used to produce the figures during these tests.

A Drake M4 watt meter, Yaseu YP-150 terminating watt meter, Kenwood SM-220 monitor-scope, Glen audio power output meter, AWA F242A noise and distortion meter, Marconi TF-995A/S signal generator, a 100 kHz crystal calibrator, and all tests were made with a regulated 13.8 volts applied to the 440S.

Frequency Stability — Stability was checked by running the receiver against VNG for long periods of time. No audible drift was detected. I also ran

the receiver in the SSB mode against the ABC Melbourne broadcast stations which have a long term stability of better than 1 Hz. Again, no audible drift was detected. (Kenwood claim a stability of $\pm 10 \times 10^{-6}$).

Transmit Power Output — Power output was measured with full drive under CW conditions and then also checked for PEP output using the monitor-scope. PEP output was checked using both voice and two-tone modulation.

Band	CW O'put	PEP O'put
1.8	117	120
3.5	115	117
7	110	112
10	112	116
14	112	115
18	112	115
21	111	113
24	110	112
28	109	110

It was noted while doing these tests that the power output meter in the 440S was in very close agreement with the above figures.

The scope pattern was very clean at all times and the PEP figures were taken under two-tone conditions with no detectable distortion. On air tests with another station indicated that intermodulation distortion was acceptably low.

Receiver Tests — The receiver audio was first checked. The extension speaker output was terminated with the audio power meter and connected to the noise and distortion meter. With an 8 ohm load, the residual noise with the audio gain fully off was -64 dBm, an excellent figure. Maximum audio power output was 2.5 watts at 32 percent distortion. At 1.8 watts, 10 percent distortion occurred which is just a bit better than the rated 1.5 watts. At .25 watts (an average listening level) distortion had dropped to 1.8 percent, a quite acceptable figure. The SSB audio response was checked by tuning across a signal from the crystal calibrator. The -6 dB points were at 100 Hz and 2.9 kHz. The curve was quite smooth between these points. The response for AM receive was checked with the following results.

100 Hz	-10dB	3 kHz	-4 dB
100 Hz	-4 dB	3.5 kHz	-8 dB
200 Hz	-1 dB	4 kHz	-7 dB
400 Hz	0 dB	5 kHz	-12 dB
1 kHz	0 dB		
2 kHz	-1 dB		

This means that you will get quite good quality for broadcast reception, but if you want to uncover

weak signals on the short wave broadcast bands, it is not so good. It is a pity that the YK-88A is not offered as an option that could be selected with the front panel selectivity control.

S-Meter Calibration — The S-meter was checked at 14.200 MHz.

S Reading	Input Signal	Signal Increase
S1	1 μ V	4 dB
S2	1.6 μ V	4 dB
S3	2.5 μ V	4 dB
S4	4.0 μ V	4 dB
S5	6.3 μ V	4 dB
S6	8.0 μ V	4 dB
S7	10.8 μ V	4 dB
S8	12.5 μ V	4 dB
S9	40.0 μ V	8 dB
S9 +10	100.0 μ V	20 dB
S9 +20	500.0 μ V	10 dB
S9 +30	1600.0 μ V	

The S-meter is calibrated to S9 +60 dB, which represents a signal of 100 mV. I hope you don't strike too many of those on the amateur bands.

The receiver was checked on each amateur band for sensitivity at an input signal of 25 μ V. Also, the signal required to give an S9 meter reading.

Freq	S/N Ratio at .25 μ V input	Input for S9
1.8 MHz	7 dB	40 μ V
3.5 MHz	14 dB	40 μ V
7 MHz	15 dB	40 μ V
10 MHz	11 dB	40 μ V
14 MHz	14 dB	40 μ V
18 MHz	15 dB	40 μ V
21 MHz	10 dB	50 μ V
24 MHz	7 dB	80 μ V
28 MHz	10 dB	50 μ V

The receiver input was terminated with a 50 ohm load and the entire tuning range was checked for spurious signals. This is a time consuming job. A total of 27 signals were heard. Most of them were in the region of .1 to 15 μ V equivalent signals with the strongest on 18.561 MHz, which reached about .5 μ V. For a price conversion receiver with coverage from 100 kHz to 30 MHz, this is very good.

Squelch sensitivity was checked in the FM mode at 29.6 MHz. A signal level of 3 μ V opened the squelch with it set very finely.

The front attenuator rated at 20 dB was checked at exactly that figure. The attenuator is very handy for checking the calibration of the S-meter and for giving reports on antenna performance such as front to back ratio readings.

FM performance was checked at 29.600 MHz. With a signal level of 7 μ V and 3 kHz deviation, a signal noise ratio of 15 dB was measured. Squelch sensitivity at the same frequency and in the FM mode was 31 μ V.

AGC Performance — AGC threshold was about 6 μ V. Signal level was increased from .5 μ V to the maximum output of the generator. The increase in audio level was measured at 15 dB.

Notch Filter — The notch filter operates in the receiver audio section as distinct from the IF notch filter in the TS-930/940. There are some disadvantages in audio notch filters in that they do not reduce the level of the interfering signal but only the effect of it after detection. Never-the-less the 440S filter does an excellent job. Attenuation was measured at three frequencies with the following results.

500 Hz	-35 dB
1.5 kHz	-35 dB
2.5 kHz	-40 dB

The actual notch is very sharp and so has very little effect on the received audio quality. This does mean that it can be a bit critical to adjust but once you get an idea of where to set the knob for a given heterodyne frequency it becomes easier

THE INSTRUCTION MANUAL

I must say that Kenwood have improved their instruction manuals. They still have a way to go but the improvement is worthwhile. There is even a page devoted to circuit description.

Sections include installation, giving basic details on setting up the transceiver for fixed and mobile operation.

The operation section firstly describes the function of each control and then goes into detail on frequency selection, memory and scanning setup.

Details are provided on the installation of the optional filters and on the several internal pre-set controls.

Fault finding is limited to operation faults or the check the antenna is connected type.

Kenwood do produce excellent service manuals for their equipment and, while I have not seen the 440S version, I would suggest it could be compulsory reading for the enthusiastic owner.

In general, the instructions are well written but one gem states the knobs, front panel and cabinet are likely to become solid after extended use. So watch out, you have been warned.

CONCLUSIONS

The 440S is a delightful transceiver to operate. I am sure it will be another winner for Kenwood. Now that all modes are included as standard, I would put the 440S near the top of a short list.

Thanks to John Hill, of Emtronics Melbourne, for the loan of our review model.

EVALUATION AND ON-AIR TEST AT A GLANCE

APPEARANCE

- Packaging**
*** Double carton with foam inserts.
- Size**
*** Not the smallest, but very acceptable.
- Weight**
*** Again not the lightest, but certainly very good considering the ATU is in-built.
- External Finish**
*** Excellent presentation
- Construction Quality**
*** Very good construction and accessibility.

FRONT PANEL

- Location of Controls**
*** Controls cover 57 functions. Layout is remarkable.
- Size of Knobs**
** A bit on the small size, but good considering the above remarks.
- Labelling**
*** Very clear except for the key pad numbering.
- Status Indicators**
*** Six function indicators, plus Morse and light mode indicators.

VFO ACTION

- Tuning Knob**
*** Good size and adjustable tension, but no finger-hole.
- Tuning Rail**
*** Only one tuning rate selectable. Stepping speed increases with fast rotation of knob.
- Digital Readout**
*** 100 kHz readout with 10 kHz selectable. Bright and clear readout.

VFO STABILITY

- *** Drift too low to detect

RECEIVER OPERATION

- Memory**
*** Breaks all records.
- IF Shift**
*** Useful to adjust audio quality and reduce some interference.

NOTCH FILTER

- *** For an audio notch, it works remarkably well.

SPOURIOUS RESPONSE

- *** Quite a few but all very low (see test section).

S-METER

- *** Constant 4 dB per S-point up to S9 (see test section).

AGC PERFORMANCE

- *** Smooth action Fast/Slow selectable, but not off



Close-up of LED Display.

SIGNAL HANDLING

- *** No cross mod heard except when noise

RIT/XT

- *** Only ± 1 kHz, but separate readout and main readout follows.

SENSITIVITY

- *** Very adequate (see test section)

PRE-AMPLIFIER

- *** No pre-amp, 20 dB attenuator only.

RF GAIN CONTROL

- *** Smooth progressive action.

NOISE BLANKER

WOODPECKER

IGNITION AND GENERAL NOISE

- *** Good on ignition noise, only fair on power line noise.

RECEIVED AUDIO QUALITY

Internal Speaker

- *** Not bad for a built-in speaker

External Speaker

- *** Matching speaker not available for test, very good on my usual station speaker.

SSB/CW Received Quality

- *** Low distortion and very clean.

AM Received Quality

- *** Good quality for local broadcast stations. Selectivity too broad for AM DX reception.

Headphone Output

- *** Stereo headphones compatible. Relative level very good.

TRANSMITTER OPERATION

CW and PEP Output

- *** Very consistent on all bands (see test section).

Audio Quality

- *** With supplied hand microphone, very acceptable.

Audio Power

- *** Quite effective if not pushed too hard.

Measuring

- *** ALC, unbalanced power output and SWR.

Relay Noise

- *** Very quiet.

CW Operation

- *** Selection of full or semi break-in.

Cooling

- *** Runs very cool with the new improved heat sink. Fan very quiet when running.

MANUAL

Owners Hand Book

- *** Somewhat improved over earlier Kenwood manuals, but still more information and better illustrations needed.

OVERALL RATING

- *** Although there are a few points of criticism, the overall concept is excellent.

Rating Code: * Poor; ** Satisfactory; *** Very Good; **** Excellent.

NEWS FROM LONDON

CLASS B MORSE NOW PERMANENT

Last year's experiment, allowing British Class B (VHF and UHF) licensees to use Morse on the air, finished on 31st March. During the year, the RSGB, on behalf of the DTI, issued over 6000 letters of temporary variation of the licence, to those wishing to participate in the experiment.

On 2nd May, the DTI announced that following the successful completion of the experiment, the concession is now a permanent feature of the licence, and that the experimental restriction of Morse operation to the station address no longer applies.

Class B licensees can only obtain A licences (all bands) by passing the 12 WPM Morse test, and this feature allows learners to practice, in the bands for which they are licensed, under real operating conditions, in preparation for the test. There are no specific restrictions for learners, but the DTI recommends that class B Morse operation should be in accordance with RSGB guidelines issued during the experimental period.

These include station identification by telephony before and after a Morse transmission, no operation in part of a band reserved exclusively for Morse — to avoid interference with regular CW operation, using on/off keying of an audio tone in the channelised (FM) parts of a band, using any authorised keying method in the multi-mode sections of the bands.

Figures released by the DTI on 2nd May show 28 450 class A and 27 180 class B licensees currently in the United Kingdom.

Contributed from AR's London Correspondent, Tony Smith G4FAL.

COUNTRY UPDATE ON 10, 18 & 24 MHz BANDS

Following is an update of countries which authorize use of the new HF bands.

10 MHz — Algeria, Andorra, Antigua, Argentina, Australia, Austria, Bahamas, Belize; Bermuda, Botswana, Brunei, Cayman Islands, China, Colombia, Costa Rica, Cyprus, Czechoslovakia, Denmark, Djibouti, Dominica, El Salvador, Faroe Islands, FI, France, Gabon, German Democratic Republic, Federal Republic of Germany, Gibraltar, Greece, Grenada, Honduras, Hong Kong, Indonesia, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Malaysia, Malta, Monaco, Montserrat, Netherlands, Netherlands Antilles, New Zealand, Nicaragua, Nigeria, Norway, Panama, Papua New Guinea, Peru, Portugal, San Marino, Senegal, Solomon Is., South Africa, Spain, Sri Lanka, Sweden, Switzerland, Syria, Tonga, Trinidad, Turkey, United Kingdom, USA, Vanuatu; Western Samoa, Yugoslavia and Zambia.

18 MHz — Algeria, Andorra, Antigua, Argentina, Australia, Austria, Bahamas, Bahrain, Botswana, Brunei, Cayman Islands, China, Colombia, Costa Rica, Cyprus, Denmark, Djibouti, El Salvador, Faroe Islands, France, Gabon, German Democratic Republic, Federal Republic of Germany, Grenada, Honduras, India, Ireland, Israel, Italy, Kuwait, Luxembourg, Malaysia, Monaco, Netherlands, Netherlands Antilles, New Zealand, Nigeria, Norway, Oman, Panama, Peru, Portugal, San Marino, Senegal, South Africa, Sri Lanka, Sweden, Switzerland, Syria, Tonga, Trinidad, Turkey, United Kingdom, Vanuatu, Yugoslavia and Zambia.

24 MHz — Algeria, Andorra, Antigua, Argentina, Australia, Austria, Bahrain, Botswana, Cayman, China, Colombia, Costa Rica, Cyprus, Denmark, Djibouti, El Salvador, Faroe Islands, France, Gabon, German Democratic Republic, Federal Republic of Germany, Grenada, Honduras, India, Ireland, Israel, Italy, Kuwait, Luxembourg, Malaysia, Monaco, Netherlands, Netherlands Antilles, Nigeria, Norway, Oman, Panama, Papua New Guinea, Peru, Portugal, San Marino, Senegal, South Africa, Sri Lanka, Sweden, Switzerland, Syria, Tonga, Trinidad, Turkey, United Kingdom, USA, Vanuatu, Yugoslavia and Zambia.

from THE ARRL Letter, 8th May 1986

DOC QSP

IT IS ILLEGAL!

All readers should note that, under the Regulations for the Radiocom Act, it is illegal for amateur stations to indulge in conversation with unidentified stations or cause disruptive communications. Amateurs who indulge in such practices are putting their own licence in jeopardy.

FIFTIETH WIA FEDERAL CONVENTION REPORT

The Wireless Institute of Australia held its 50th Federal Convention in Melbourne on the 25th, 26th and 27th April 1986.

The evening prior to the Convention was spent in informal discussions on many of the major issues that were on the agenda.

The Convention was opened shortly after 8pm on Friday morning by the Federal President, David Wardlaw VK3ADW. David welcomed all Divisional delegates and NZART representatives, Terry Carrell ZL3QL, NZART President, and Jock White ZL2QX, NZART Contest and Awards Manager.

The minutes of the 49th Federal Convention were received and adopted.

REPORTS PRESENTED

The President's Report was received and adopted. David stated that there had been a noticeable change in the Department of Communications (DOC) attitude to the amateur service, particularly with regard to de-regulation. There are on going discussions with DOC in regard to Japanese/Australian visitor's licences.

The President added that it was unfortunate that the Secretary of the WIA was still not well enough to attend the Convention. Earl Russell VK5DER had resigned from the Executive and was Acting-Secretary. All delegates wished Reg a speedy return to full health.

The IARU Report was then received and adopted. David, as the WIA IARU Liaison Officer, spoke on the Report. He fore-shadowed the necessity for representation at a Region 3 Administrative Radio Conference for the Fixed and Mobile Service in 1988, where 146 and 148 MHz will come under discussion.

Ross Burstal VK3CRB, presented the Treasurer's Report. Ross stated that the Institute was in a sound financial position at the moment, but would need to keep abreast of cost pressures caused by inflation and the falling value of the Australian dollar on the overseas market.

Branda Edmonds VK3KT, presented the Federal Education Co-ordinator's Report, and informed the Councilors that the Novice Study Guide was completed and had been forwarded to the DOC examinations section for approval.

The VK/ZL/Oceania Contest Manager's Report was presented by Greg Williams VK3BGW, who indicated that he was retiring from the position and the Institute would need to find a replacement. Jock White ZL2QX, Greg's counterpart in New Zealand, thanked Greg for the work he had done with the Contest, and for his co-operation.

Bill Rice VK3ABP, the Editor of *Amateur Radio* magazine presented the Publications Committee Report and requested that all Divisions keep the pressure on members for contributions to AR.

The Federal Historian, Max Hull VK3ZS, presented his Report and expressed pleasure at the interest shown in the 75th Anniversary activities.

Jack O'Shannessy VK3SP, who had been Chairman of the 75th Anniversary Committee, informed Councilors that he would not be standing for re-election to the Federal Executive.

The President thanked Jack for his service to the Institute over many years, both as a member of Executive and prior to coming on to the Executive when Jack gave valuable advice and assistance in the preparation for WARC 79.

The Federal Technical Advisory Committee (FTAC) Report was presented by Peter Gamble VK3YRP, Chairman of FTAC. Peter said that 1985 had been a very busy year for FTAC. Three papers had been prepared and circulated for comment. These were: Band-Planning, Packet Radio and

Repeaters. Peter tabled these papers for discussion later in the Convention.

VK1 moved a vote of thanks to FTAC. Allen Foxcroft VK3AE, presented the Federal Standards Co-ordinator's Report with the comment that the working group dealing with immunity levels is close to resolution and AS2772 on non-ionising radiation has been completed.

VK4 congratulated Allan on his work in the Standards area, but claimed that much of it was beyond their comprehension. Allan replied that he felt that most Divisions were hiding behind this argument and refraining from responding to questions.

The CASPAR Report was presented by Gordon Bracawell VK3DX. Gordon informed the Convention that CASPAR was not a continuous committee, but is reformed as needed by the Executive. In this instance, CASPAR was used to study the draft of Chapter 5 of the revised Amateur Operator's Handbook, and prepare a response.

Michael Owen VK3RI, said it was most helpful having the response from CASPAR as it was prepared by practical people and was useful as a basis for a legal response.

Ron Henderson VK1RH, presented the Federal WICEN Co-ordinator's Report. He commented that it appeared that most WICEN groups have had poor liaison with the Divisions. The WICEN calling frequency of 3.600 MHz has a problem in some areas due to interference.

Neil Penfold VK6NE, presented the Federal QSL Manager's Report. He said that he had difficulty getting forwarding addresses for VKQ cards. The Department of Science would not release information on a person's home address when they were in Antarctica.

The AMSAT Co-ordinator, Graham Ratcliff VK5AGR, presented his report. He pointed out that funds are required to keep the satellite program going. Graham suggested that the WIA could lead the way by donating say, 50 cents per member, to the project and hopefully other societies in the Region would follow suit.

Other reports were received from: John Ingham VK5KG, Federal Video Tape Co-ordinator;

Ken Hall VK5AKH, Federal Awards Manager; and Ian Hunt VK5OX, Federal Contest Manager.

The Acting-Secretary, Earl Russell VK5BER, presented the Secretary's Report.

The FCM Report contained several recommendations regarding guidelines for the issue of certificates to winners of the WIA contests. They were accepted by the Council. Ian also included revised terms of reference for the Federal Contest Manager. These were accepted by the Council after minor amendments.

The VK2 Division proposed that consideration be given to expanding the Novice sub-band on 80 metres. Council voted against this proposal under existing circumstances, but Council agreed to a motion arising — that the Institute re-affirms its policy to seek expansion of the 80 metre band, and when this is achieved, an expansion of the Novice sub-band in that band will be reconsidered.

IMPORT/DUTY

Council discussed restoration of the by-law that allowed amateur transmitters to be imported duty free. Michael Owen VK3RI, informed Council that regulations under Section 65(15) of the Radiocom Act which will define transmitters, would need to be completed before an approach should be made to the Department of Trade, Industry and Commerce. Council instructed the Executive to proceed with negotiations as soon as appropriate regulations have been made.

1986 CONVENTION

The VK1 Division put forward a proposal that the

1988 Convention be held in Canberra. The Convention would be held in conjunction with other planned Bi-Centennial activities. The Division plans to stage a major Communications Exhibition and stand including the National Telly Room, have already been booked. The Council agreed to hold the 1988 Federal Convention in Canberra.

DOC ADDRESS

Mr David Hunt, Manager of the Regulatory Operations Branch of DOC addressed the Convention.

He informed the Convention that DOC had agreed to permit limited licensees to use CW in their authorised bands.

Due to changes in the examination fee structure, the credit for a pass in a particular subject is now retained indefinitely. This applies from the date of introduction of the new examination fees, ie February 1986 exam. Negotiations are continuing with the Japanese administration to get permission for Australian amateurs to obtain visitor's licences in Japan, similar to the arrangement whereby Japanese visitors to Australia are able to get an Australian visitor's licence.

DOC are preparing a new edition of the Amateur Operator's Handbook to incorporate changes in the Radiocom Act and subsequent regulations. The Institute is in close consultation with the Department during the preparation of the Handbook. Amateur station licenses that will be issued in the future will refer to the Handbook for permitted frequencies and modes for the various grades of licence instead of having them printed on the licence itself.

David went on to say that the Department was very concerned about the loss of revenue from unlicensed stations. They estimate this loss to be between \$6 and \$10 million from the Citizen Band unlicensed stations alone. DOC are investigating a system where mobile and portable stations of all services will be required to display a registration label to indicate that they are licensed. The registration labels will have a coded number on them to indicate the licensee and will be a different colour each year. The labels will be posted out with licence renewals. Stations in the amateur service will be allowed as many labels as they require, on request. It will be a condition of licensing that a registration label be displayed. Failure to display a registration label could attract an on-the-spot fine of about \$50. The Department hopes to be able to contain or reduce licence fees with the increased revenue from previously unlicensed stations.

The Department has prepared a special oral examination for handicapped persons who are unable to sit a written examination for an amateur licence. A senior officer of the Department would visit the candidates home and conduct the examination on a conversational basis rather than straight questions and answers. Persons who want to request an oral examination should apply in the normal manner, including a medical certificate and supporting statement indicating the disability.

The Department's overall aim is for de-regulation of the amateur service to provide maximum freedom for amateurs to experiment. This has been demonstrated in the DOC attitude to very Packet Radio and Repeaters. David Hunt then offered to answer questions.

The President asked whether the new computer DCH is installing would allow them to extend the length of a licensing period from 12 months to five years, as a five-year licence is Institute policy. Mr Hunt replied that currently no extension could be made, but he would look at the matter again when the computer was fully up and running.

The President of NZART asked why there should be a charge for a visitor's licence in Australia when it is free in New Zealand. DOC will consider.

VK2 Inquired as to the time duration of the oral examination. David Hunt replied that there was no fixed time limit but would normally expect a morning or afternoon. They did not want the candidate to feel under any pressure.

In closing, David spoke on prosecutions. Since the Radcom Act came into force, the minimum fine imposed by the courts so far has been \$400 plus confiscated equipment. DOC's success rate has been 100 percent.

The President, David Wardlaw, thanked David Hunt for giving up his time to attend the Convention and speak with the Council.

CALL BOOK

Agenda items dealing with the Call Book were discussed and it was decided to:

- Print a separate listing of overseas members and call signs (not list them in with the shortwave listeners as has been done in the past).
- Identify WIA members in the Call Book.
- Not include a members preferred name due to insufficient space in listing.

POSSIBLE OUT-OF-HOURS

It was decided that DOC should be approached to

conduct some amateur examinations outside of normal office hours. The Institute could provide some man-power to assist in keeping cost down. The Executive will discuss this matter with DOC at the next joint meeting.

DEMANDS FOR PAYMENT

A motion that QSL cards for which a payment is demanded should not count towards WIA awards was lost. Council agreed that demands for payment for QSL cards was against the amateur spirit but did not want to impose an undue workload on the Awards Manager.

INTERFERENCE

A motion that the WIA undertake investigations and recommend solutions to interference on the two-metre band from adjacent paging systems and to the 80 metre band from the second harmonic from cordless telephones was carried.

Allan Foxcroft told the Council that he had already initiated discussions on the cordless telephone interference with the Department.

FEDERAL COMMITTEE

A federal committee will be formed to investigate

increased privileges for Novices and identify any changes that would be required to the syllabus. They will also make recommendations for actions and activities to ensure the long term survival of amateur radio as a hobby.

THE EXECUTIVE

Federal Executive for the next 12 months was elected. Members are: David Wardlaw — President, Gordon Bracewell, Ron Henderson, Allan Foxcroft, Ross Burstall, Peter Gamble, Bill Rice, Peter Wolenden, and Michael Owen.

This is a very brief summary of the three days work carried out over the ANZAC holiday weekend by your Federal Council. Sessions commenced at 9am and continued to 10.30pm each day.

or

Equipment Review

GIL GRIBB VK3CQG
11 Wills Street, Bright, Vic. 3741

PROGRAMMABLE MEMORY KEYS



Whether you are a newly licensed novice or an old timer, there is no doubt that CW can be a little tiring on the arm if you are still using a hand pump.

With a choice of so many alternatives, from straight hand key to full keyboard and automatic computer sending, I chose the electronic paddle keyer as my primary method of generating Morse as it takes 95 percent of the physical strain off the wrist and arm, yet still leaves full control of the sending.

I had been using a tape recorder to record CQ-calls for contesting, but they can be fiddly to set up properly, so I felt I needed some solid-state memory.

Although I had seen a few circuits for using memory chips, (see the excellent article in *Amateur Radio*, May 1986), I am not yet much of a kit builder, or home-brewer for that matter, so I had been looking at different commercially built modules.

After considering all the facts gleaned on air and from numerous articles, advertisements and brochures, I sent off for the ETM-8C. My key arrived in the post 12 days later, (I love opening presents, don't you?), the delay being in my own arriving memory.

First impressions were of its very clean appearance, compact size and light weight. Large paddles with plenty of inertia, even on the tightest spring tension making it easier to operate even at my highest speed (about 30 WPM). My old Gelbreth paddle was a bit light and flexible and I was having trouble when sending at high speed.

The enclosed instructions in good English (also in German), with circuit diagrams and layout, were quite comprehensive and, like all instructions, must be read thoroughly for a full understanding.

The front panel has ON/OFF/SPEED knob, paddles, and weight knob only, with all the other controls at the rear of the top panel — easy to get at with either hand! It is worth mentioning that the ETM-8C is a professional keyer built mainly for professional operators and so is built with many other things in mind other than just good looks.

The layout, both inside and out is uncluttered and very easy to get at, with all the ICs in sockets and ample space for minor modifications to suit the individual. Simple modifications, such as external keyer connection, internal speaker, remote memory control, or power supply connection, would take a minimum of time and effort to build in. In fact, the only modification I intend is

to change the sense of the speed control, which is fast at switch on and decreases with clockwise rotation, although I seem to be getting used to it after about 10 hours use.

Construction is sturdy enough to take a good tumble off the bench and is completely disassembled by removing eight screws.

The main feature, of course, is the memory, and it really is a pleasure to operate. Select either read or write on the slide switch, then the memory select keys, and the repeat key are all that is needed.

To write, just select write on the slide switch, press the appropriate memory button, and send the message. This can be done while going to air, while listening and waiting for your turn, or alone using the in-built side tone monitor. Should the memory fill up, it will stop writing and the LED goes out as the memory re-sets. So you can continue with the message in the next memory if necessary.

I found that I could fit one-and-a-half times the alphabet in one memory using clear spacing. I could also fit a complete three by three call in the same space, ie. VK3XXX VK3XXX VK3XXX DE VK3XXX VK3XXX VK3XXX VK3XXX K. It took three goes to get it right!

Sending is extremely simple.

With the slide switch in the read position simply press the desired memory key and the message goes out. To repeat, also press the repeat key and the message will continue until stopped by tapping on the paddle.

The memory push-buttons are not marked but I found it easy to remember the separate messages during an evenings operating. If I forget, I just flick at the VOX on the rig and have a quick listen on the set's monitor.

The other controls include a two-position switch for spacing the memory, a disable switch for the dot-dash memory, and the auto-stop switch. The circuit is similar to the EA (March 1978) keyer but the memory, the addition of a weight control, and the dot-dash memory disable.

After operating the keyer for a number of nightly sessions, I have programmed the memory with a CQ call, an ident, a QRL? call, and calls to various stations I work on a regular basis. This leaves me a lot more time for writing cards and filling in the log, etc.

All on air comments have been good with

reference to both the sound of the keyer and to the improvement in my sending, which is nice to hear.

As the ETM-8C is a professional keyer, you will find that if you listen to the coastal stations via VHS, you will probably hear one or two in operation, as the importer began by supplying his working colleagues and has only recently entered the amateur market.

At just over \$200 I think it is the best value for money that I have seen on the market.

SPECIFICATIONS

- Semi-conductors**
 - 1 CMOS Ram (4096 bit)
 - 14 CMOS ICs
 - 3 Transistors
 - 7 Diodes
 - 1 LED
- Memories**
 - 8 512 bit memory locations (about 50 characters each)
 - repeat/tune key for continuous repetition of messages and continuous key-down of transmitter
 - automatic delay at the end of messages before resending with two delay times selected by a slide switch
 - LED indication of memory operation
 - automatic stop and reset at operation of paddles
- Keying**
 - speed range 6-50 WPM
 - built-in dot-dash memory which can be disabled by a slide switch
 - adjustable dash-dot-pause ratio, default 3:1
 - built-in side-tone generator
 - squeeze feature for ionic operation
- Keying Output**
 - relay keying maximum 250 volts or 5 amps or 25 watts
 - transistor keying positive to ground, maximum 65 volts, 1 amp
- Power Requirements**
 - 4 size AA batteries (built-in battery holder)
 - idling current 201 mA (typ)
 - relay keying 20 mA
 - transistor keying 3mA
 - additional 6 mA during memory operation
 - Dimensions and Weight**
 - 45.5 by 113 by 160 mm (HWD)
 - 800 grams without batteries

or



Contests



Ian Hunt VK5QX
FEDERAL CONTEST MANAGER
Box 1234, GPO, Adelaide, SA 5001

CONTEST CALENDAR

JULY	
1	Canada Day Contest
5-6	Venezuelan SSB Contest
12-13	IARU Radiosport
18-20	Colombian Independence Contest 1986
26-27	Armedillo Run CW (See May issue)
28-29	Venezuelan CW Contest
28-28	MARAC County Hunters CW
AUGUST	
9-10	European CW Contest
16-17	Remembrance Day Contest (Rules this issue)
16-17	New Mexico QSO Party
23-24	Alaskan CW Contest (Rules June issue)

SEPTEMBER	
13-14	European Phone Contest
20-21	Scandinavian QW Activity
27-28	Scandinavian SSB Activity

OCTOBER	
4-5	VK/ZL Oceanic Phone Contest
4-5	IRSA World Championship
11-12	VK/ZL Oceanic CW Contest
15-17	YLRL Anniversary CW Party
25-26	QW WW DX Phone Contest
29-31	YLRL Anniversary SSB Party

NOVEMBER	
8-9	Australian Ladies Amateur Radio Association Contest
8-9	European RTTY Contest
29-30	QW WW DX CW Contest

VENEZUELANA CONTEST

Times 0000 UTC Saturday to 2400 UTC Sunday. Phone 5-6th July CW 26-27th July.

This is the 24th yearly contest celebrating Venezuela's Independence. It is a world-wide type contest; therefore do not confine your activity to working YVs only. Use all six HF bands, 10 through to 160 metres. There are four classes: Single Operator, Single and All-band and Multi-operator single and Multi-transmitter EXCHANGE RS(T) plus a QSO number starting with 001.

POINTS: Contacts between stations in different countries, two points. Between stations in the same country zero points, but permitted for multiplier credit.

MULTIPLIER: One for each YV call area, and each country (including own) worked on each band.

FINAL SCORE: Total QSO points from all bands multiplied by the sum of the multiplier from each band.

AWARDS: A plaque to the highest scorer in each class. Medals to the highest scoring single operator in each continent and the Bolivian countries (Bolivia, Colombia, Ecuador, Panama, Peru). Certificates to stations in the Americas working 15 YV stations and 10 different countries and Asia and Oceania stations working five YVs and 10 countries. Use a separate log sheet for each band, and a summary sheet showing the scoring, your name and address (in block letters), and the usual signed declaration. It is requested that all award applicants include a remittance of US\$2 or its equivalent in IRCs. Mailing deadline is 15th August for phone entries and 15th September for CW. Post to: Radio Club Venezolano, PO Box 2265, Caracas, 1010-A Venezuela.

REMEMBRANCE DAY CONTEST — 1986

In this issue, I have provided the rules for the 1986 Remembrance Day Contest — the Big One for the Year.

This year the rules are changed very little from last year; however, I will detail the few changes. These are:

— on VHF, repeat contacts may be made on the basis of two hourly intervals.

— minimum number of contacts for a valid log is 10.

— certificates will be issued under the guidelines endorsed by the recent Federal Con-

vention (see below for details)

— the VKS area is regarded as a distinctly separate area for State scoring purposes.

These rule changes are minor and should present no real difficulties to entrants. I would like to think that all entrants do make themselves familiar with the rules before entering the contest and also, give warning once more that where logs are untidy or do not meet the requirements of the rules, strong consideration will be given to disqualification; eg no Front Sheet or Declaration, etc.

This contest is one which carries with it a remarkable and quite marvellous tradition. I know that there are some operators who do not go on air at any other time of the year and yet they would definitely never miss-out on operating in the Annual Remembrance Day Contest, in memory of their mates who served and gave their all. There is certainly something very special about this contest.

This year, I will provide a listing of the names and call signs of those Silent Keys whose names are engraved on the Remembrance Day Contest Trophy, and I ask that you please remember them in such a manner that, as you operate, you operate in a way that you know they would approve of.

Here a just a few facts concerning the Trophy which may be of interest to you. The trophy has been won by all Divisions at some stage of its existence, however the VKS Division has won it on more consecutive occasions than any other. It was during one of these winning runs that the boys up north in Darwin asked if they could see the Trophy as they had helped to win it as part of the Division. This request was immediately acceded to. So, can you guess just where the Trophy was sitting on that fateful Christmas Day in 1974, when Cyclone Tracy struck the City of Darwin? It was atop in all its glory in the lounge room of Henry VK6HAI. The house was completely demolished and the Trophy disappeared below the resultant tons of debris. Panic followed by gloom abounded amongst members of the VKS Divisional Council as the realisation dawned that the precious trophy might now be lost forever, and that we were responsible for it having been sent north in the first place.

I am not sure whether or not the current Divisional President was on the verge of resigning when the news was suddenly received that the Trophy had been recovered, albeit rather battered, rain and salt stained, and in other words — somewhat the worse for wear.

The precious object was returned to Adelaide, where it was handed over to Bob VK5PB, who, at the time, was operating an electro-plating business. He did a very fine job of repairing it and as well as the general cleaning up he finished the replica tower and antenna, the peripheral band and inscribed plate on the base in gold plating. This thus marked that particular part of the Trophy's career as prior to this happening, it had always been silver plated. The silver had, of course, taken a terrible beating during what it had been through, and gold is a better and more lasting finish. The shields, engraved with the various winning Divisions, were left silver-plated.

At a later date, following the winning of the contest by the VK1 Division, there were no more blank shields on the Trophy and there was no suitable space upon which to place additional subdivisions.

I arranged to have a die made and a large number of additional shields punched out of brass sheet. These were identical in size and shape to the existing shields. At the same time, I approached a workmate who was skilled in model making. He had an additional section made to attach to the base. When this work was completed, another friend had the new base section stained to exactly match the original. The work was so meticulously carried out that, unless you turned the Trophy upside down, you could not tell that the base was not made from the one piece of

material. My wife, Sylvia, then arranged for the shields to be engraved with the details necessary and with all the shields removed, organised for them to be gold plated. Thus the Trophy was brought to its present state of uniform colour and metal-work.

For those who have seen it, I am sure you will agree that it does look most spectacular and must, even at this late stage, express our gratitude to all those who assisted in bringing this about.

As a result of the addition to the base, the Trophy would no longer fit into its box so John VK5NWX organised for a very nice, new and strong, case to be made in which the Trophy could be transported.

There is a portion of the *Life and History of the impressive Remembrance Day Contest Trophy*.

I will now list the names and call signs of those operators who lost their lives whilst on active service during the Second World War, and who are commemorated with their names being engraved on our Trophy. It is these names you will hear read out as part of the Opening Ceremony prior to the commencement of the Contest.

VK2BQ	F W S Easton	Royal Australian Air Force
VK2JV	C D Roberts	Australian Military Forces
VK2VJ	V J E Jarvis	Royal Australian Air Force
VK2YK	W Abbott	Royal Australian Air Force
VK2AJB	G C Curle	Royal Australian Air Force
VK3DQ	J D Morris	Australian Military Forces
VK3GO	T Stephens	Royal Australian Air Force
VK3HN	J M Candlish	Australian Military Forces
VK3IE	J E Mann	Royal Australian Navy
VK3NG	N E Gunter	Australian Merchant Marine
VK3OR	M D Orr	Royal Australian Air Force
VK3PL	J F Colthorp	Royal Australian Air Force
VK3PV	R P Veal	Australian Military Forces
VK3SF	S W Jones	Australian Military Forces
VK3UW	J A Burrage	Royal Australian Air Force
VK3VE	J E Snadden	Royal Australian Air Force
VK4DR	D A Laws	Australian Military Forces
VK4FS	F J Starr	Royal Australian Air Force
VK4PR	R Allen	Royal Australian Air Force
VK5AF	C A Ives	Royal Australian Air Force
VK5BL	B James	Royal Australian Air Force
VK5BW	J G Phillips	Australian Military Forces
VK6GR	A H G Rippin	Royal Australian Navy
VK6JG	J E Goddard	Royal Australian Air Force
VK6KS	K S Anderson	Australian Military Forces
VK6PP	P P Paterson	Royal Australian Air Force

*They shall grow not old as we that are left grow old
Age shall not weary them nor the years condemn
At the going down of the sun and in the morning
We will remember them.*

You may note that the number of those listed serving in the Royal Australian Air Force greatly exceeds those in the other branches of the forces — I understand that this is not because being in the Air Force was more hazardous. Prior to the commencement of the war, a large number of amateur radio operators were involved as members of the Air Force Reserve. Thus there were probably more amateurs within the ranks of the Air Force than in the other services.

Perhaps someone who has more knowledge of the history of that era may like to write and provide me with more information regarding such matters. Any further information along these lines would be welcome.

Following are the 1986 Rules in detail.

1986 REMEMBRANCE DAY CONTEST — RULES

This contest is held to commemorate those amateurs who died during WWII, and is designed to encourage friendly participation between all amateurs and to help in the improvement of operating skills of all participants.

This contest is held annually during the week-end nearest the 15th August, the date on which hostilities ceased in the south-west Pacific area.

The contest is preceded by a short opening address by a notable personality, which is transmitted on various VHF frequencies during the 15 minutes immediately prior to the commencement of the contest. As part of this opening ceremony, a Roll Call of the names of those amateurs who paid the Supreme Sacrifice, is read.

A perpetual trophy is awarded annually for competition between Divisions of the Wireless Institute of Australia. It is inscribed with the names of those Australian amateurs who made the Supreme Sacrifice and so perpetuate their memory throughout amateur radio in Australia.

The name of the winning Division each year is also inscribed on the trophy and in addition, the winning Division will receive a suitable certificate. The winning Division also holds the trophy for the next 12 months, after it is presented at the Annual Federal Convention.

Amateurs in each VK call area will endeavour to contact other amateurs in their VK call areas, P2 and ZL on bands 1 to 30 MHz, except the 10, 18 and 24 MHz bands.

In any VK call area, including their own, P2 and ZL on bands above 52 MHz, and as indicated in Rule 5.

Contest Period
0800 UTC 16th August to 0759 UTC 17th August 1986
All Australian amateur stations are requested, as a mark of respect, to observe 15 minutes silence prior to the commencement of the contest, and during this period that the Opening Ceremony Broadcast, referred to above, will take place.

Rules
1. There will be two contest categories:
(a) High Frequency (HF) — for operation on bands below the 52 MHz band
(b) Very High Frequency (VHF) — for operation on bands from 52 MHz and upwards

2. In each category there will be three sections.

(a) Transmitting Phone

(b) Transmitting CW

(c) Receiving

Modes applicable to each section are as follows:

(a) AM, FM, SSB, TV

(b) CW, RTTY

(c) Receiving (a) or (b)

3. All Australian amateurs (VK call sign) may enter the contest, whether their stations are fixed, portable, or mobile. Members and non-members of the Wireless Institute of Australia are eligible for awards.

4. Cross Mode Operation is permitted. Cross Band Operation is not permitted excepting via a satellite repeater.

5. Scoring Contacts

(a) All contacts score one point.

(b) On all bands a station in another call area may be contacted once on each band using each mode. That is, you may work the same station on each band on Phone, CW, RTTY and TV

(c) On the bands 52 MHz and above, the same station in any call area may be worked using any of the modes listed in Rule 5b not less than two hours since the previous same band/mode contact. However, the same station may be contacted repeatedly via satellite not more than once by each mode on each orbit

(d) Acceptable logs for all entries must show a minimum of at least 10 valid contacts.

6. Multi-Operator Stations — If not permitted (except as in Rule 7), although log keepers are allowed. Only the licensed operator is allowed to make a contact under his/her own call sign. Should two or more operators wish to operate any particular station each will be considered as a contestant and must submit a log under the individual call sign which applies to that operator.

7. Club Stations may be operated by more than one operator, but only one operator may operate at any time; ie no multi-transmission. All operators at any club station must sign the declaration.

8. Ciphers — for a contact to be valid, serial numbers must be exchanged between stations making the contact. The serial number will comprise three figures commencing 001 for the first contact, and increasing by one for each successive contact. Should the serial number 999 be reached, the serial number will revert again to 001.

9. Terrestrial Repeaters — contacts via terrestrial repeaters are not permitted for scoring purposes. Contacts may be arranged through a repeater and successful on answer frequency will count for scoring purposes. The practice of operating on repeater frequencies in simplex mode is not permitted.

10. Portable Operation — Log scores of operators located outside their allocated call district will be credited to that call area in which the operation takes place; eg VK5XY2 — this score will be added to the VK5 call area.

11. Entries — a log of all contacts must be submitted. This should be in the format as shown in the example and must be on one side of the paper only.

A Front Sheet must also be included showing the following information in this order:

Category (HF or VHF), Section (Phone, CW or Receiving), Call Sign, Name, Address, Total Score, Page Total.

Declaration: "I hereby certify that I have operated in accordance with the rules and spirit of the contest."

Signed: Date:

Logs are to be forwarded to the Federal Contest Manager, PO Box 1234, GPO, Adelaide, SA 5001

Envelope to be endorsed REMEMBRANCE DAY CONTEST on the FRONT outside. Entries must be forwarded in time to reach the box number by 20th September 1986. An entries received later than this date may be used as Check Logs only.

12. Disqualification — see the general disqualification rules as printed in detail in the August 1985 issue of *Amateur Radio*.

Any station observed during the contest as constantly departing from the generally accepted codes of operating ethics may also be disqualified.

13. Awards — certificates will be issued in accordance with the Guidelines for Certificate Issue *Remembrance Day Contest* as adopted by the Federal Convention, 1986, details of which are published below.

Determination of Winning Division
Scores by stations in VK0 are added to VK7.

Scores by VK9 stations are added to the mainland call area which is geographically nearest.

Scores claimed by P2 and ZL stations are not included in the scores of any VK call area.

The formula to be applied to determine the winning Division is as follows:

Total Contacts per Division / Total Licenses per Division times the Weighting Factor.
The Weighting Factor is calculated such that each such WIA Division perform equally as well in 1985 as in the past nine years (averaged) the result would be a seven-way dead-heat.

Consequently, the most improved Division will win the trophy and also earn a revised and lower weighting factor for the following year.

Receiving Section Rules

1. This section is open to all shortwave listeners in Australia, Papua New Guinea and New Zealand. No active transmitting station may enter this section.

2. Contest Times and logging of stations on each band are as for transmitting.

3. Logs should be set out as per the example. It is not permissible to log a station calling CQ. The detail shown in the example must be recorded.

4. Scoring will be as per Rule 5 for transmitting with other aspects of that same rule also applying.

5. Club Stations may enter this section. All operators must sign the declaration.

Awards for SWLs
Certificates will be awarded to the highest scorer in each call area. Further certificates may be issued at the discretion of the FCM.

Dupe Sheets
Where stations make a reasonable number of contacts it is most helpful that they use some form of checking system to ensure that they do not have invalid duplicate contacts. A form of sheet which provides a convenient method of making such checks for each band was described in *Amateur Radio*, December 1984, page 54. I would suggest that you should use such sheets. Whilst it is not mandatory that you do so, it would be of assistance to the contest manager if you forward a copy of same, together with your log.

EXAMPLE TRANSMITTING LOG

Remembrance Day Contest 1986

Call Sign: VK1XXX Category: HF

Section: (a) Transmitting Phone

DATE TIME (UTC)	BAND (MHz)	MODE Z	CALL	NO IN- 7	NO OUT- 8	PTS
10.35						
0800	14	SSB	VK200	001	002	1
0802			VK8L	002	001	1
0805			VK5ANW	003	011	1
0807			ZL2AGQ	004	003	1
0809			VK4XX	005	007	1

Page 1 of 10 Page Total 40

EXAMPLE FRONT SHEET

Remembrance Day Contest 1986

Category: HF Section: (a) Transmitting Phone

Call Sign: VK1XXX Name: Joe Brown

Address: PO Box 123, Farm Orchard, ACT 2611

Total Score: 1488 points

Page Total: 10 Sheets 1488 points

Page 40

2 30

3 40

4 50

5 60

6 70

7 80

8 90

9 100

10 110

11 120

12 130

13 140

14 150

15 160

16 170

17 180

18 190

19 200

20 210

21 220

22 230

23 240

24 250

25 260

26 270

27 280

28 290

29 300

30 310

31 320

32 330

33 340

34 350

35 360

36 370

37 380

38 390

39 400

40 410

41 420

42 430

43 440

44 450

45 460

46 470

47 480

48 490

49 500

50 510

51 520

52 530

53 540

54 550

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56 570

57 580

58 590

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72 730

73 740

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83 840

84 850

85 860

86 870

87 880

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89 900

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91 920

92 930

93 940

94 950

95 960

96 970

97 980

98 990

99 1000

100 1010

101 1020

102 1030

103 1040

104 1050

105 1060

106 1070

107 1080

108 1090

109 1100

110 1110

111 1120

112 1130

113 1140

114 1150

115 1160

116 1170

117 1180

118 1190

119 1200

120 1210

121 1220

122 1230

123 1240

124 1250

125 1260

126 1270

127 1280

128 1290

129 1300

130 1310

131 1320

132 1330

133 1340

134 1350

135 1360

136 1370

137 1380

138 1390

139 1400

140 1410

141 1420

142 1430

143 1440

144 1450

145 1460

146 1470

147 1480

148 1490

149 1500

150 1510

151 1520

152 1530

153 1540

154 1550

155 1560

156 1570

157 1580

158 1590

159 1600

160 1610

161 1620

162 1630

163 1640

164 1650

165 1660

write this — VK5QXJ! During the course of our discussions, we both kept in mind the good of amateur radio as a whole, and also the aim of providing benefit to our members on both sides of the Tasman.

It was to this end that we both agreed that it would be most desirable if the Field Day Contests of both countries were made to coincide, as well as having the Remembrance Day Contest and the NZART Memorial Contest held on the same weekend. Our New Zealand friends run their Memorial Contest for the same reason that we have our Remembrance Day Contest and it would be most fitting to combine the two. The rules for each contest are totally different, however 21.2GX and myself have seen that it is quite feasible, with both contests coinciding, for any operator, VK or ZL, to actually operate in both contests if he/she should so desire. The same applies to the respective Field Day Contests as well. At this stage, we could not do anything about these contests for this year, so this is just prior notice for next year.

I will provide further details regarding this approach in future issues.

ANNUAL REPORT

My Annual Report to the 1986 Federal Convention was comprised of the following items:
Annual Report — (Pages 1-4)
Guidelines for Certificate Issue, Remembrance Day Contest HF Contest Championship Rules
FCM's Terms of Reference, Amendments — (Pages 1-3).

Remembrance Day Contest Scoring System — (Pages 1-3).

FCM's Recommendations — (Pages 1-2).

FCM's Requests — (Pages 1-2).

I intend, over the next few months, to provide you with more information regarding these items, however I provide, with this issue, the details of the Guidelines for Certificate Issue, Remembrance Day Contest. These have been accepted and approved by the Federal Convention and thus now form a portion of the rules for the contest. I am sure that you will appreciate the reasoning behind this altered approach when you have considered the content of the material carefully.

It may interest you to know that under the old rules in excess of 100 certificates were issued for the 1985 Contest. Some of these were to stations who had really only made a relatively few number of contacts.

You may also have been wondering about the results of the HF Contest Championship Contest for 1985. I would hope that I can soon provide these and I am merely awaiting the results of the VKZL Contest for 1985 to become available, as these notes are being written in May.

GUIDELINE FOR CERTIFICATE ISSUE, REMEMBRANCE DAY CONTEST

Certificates will be issued on the following basis:

1. Top scorer in each section (see also 4 below).

2. Top Novice Class station in each section, but as per proviso 3 below (N/K calls compete on an equal basis when operating in HF (Novice) Band segments, therefore there is no justification for separate certificates for each different type of call sign).

3. Where an entry other than the top scorer is concerned (as per 2 above), a certificate will only be issued to a station if that station's score is equal to, or greater than, the average score in the applicable section for that State/Division.

4. Where only one entry exists in any section, a certificate will only be issued when the score for that entry is equal to, or greater than, the average national score for that category/section of the contest.

5. On VHF the top scorer only in each section will be awarded a certificate (There is no justification for separate certificates for holders of Full, Z or K calls as each compete on an equal basis on VHF).

6. The above rules apply with the understanding, as already determined policy, that the Federal Contest Manager has the power of discretion in such matters and may either award additional certificates where he considers it

warranted or not issue a certificate if he considers one unwarranted.

The policy presented in detail in the above guidelines falls within the prerogative of the Federal Contest Manager as per General Guidelines already laid down from the 1985 Federal Convention. Certificates for the 1985 Contest were issued on the above basis.

This document serves merely to apply the rules in a more concrete manner. If these rules are followed, problems of issuing an excessive number of certificates will be overcome, each certificate will have more value and not be devalued by such instances where a certificate is issued to the Top Scorer in a Section/State because the entry was the only one from that State.

It is suggested that a similar approach to that shown in these guidelines could be used when considering the allocation of certificates for other contests.

JOHN MOYLE MEMORIAL FIELD DAY CONTEST — 1986 RESULTS

I am very pleased to be able to bring you the results of this contest.

It was very well patronised this year and most entrants seem to have enjoyed themselves. I am also most appreciative of the photographs which have been forwarded to me and I am sure that they will be of interest to you.

A total of 75 logs were received with 54 of these being for stations which were operated in the field. Details are as follows.

24 HOUR DIVISION

Section (a) Phone, Single Operator

VK5SJ	3535	VK5QX	1891
		VK3APW	1365
		VK2ARZ	892
		VK200	254
		VK2IV	Check

Section (b) CW, Single Operator

VK3CIG	2392	VK5DL	384
VK2PA	1440		

Section (c) Open, Single Operator

VK4BZB	1556	VK2EL	1226
		VK3SP	838
		VK3JM	636
		VK1DA	215

Section (d) Phone, Multi-Operator

VK3CNE	22713	VK3CMB	3558
VK3ANR	17914	VK3CSE	3130
VK1WI	8782	VK30BS	1785
VK1ACA	6386	VK3BSP	1077
VK5AT	5513	VK4RR	971
VK4WIM	2520	VK4BPA	959
VK4WIM	2171	VK5BYG	864

Section (e) Phone, Multi-Operator

VK3BGC	1982		
VK5BPA	1771		
VK4WIT	1594		

Section (f) CW, Multi-Operator

VK8TTY	154		
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Section (g) Open, Multi-Operator

VK3ATM	22176	VK4BHV	1803
VK2WG	21995	VK2HZ	1365
VK3BML	5002	VK4BA	Check
VK2FFG	4913		
VK3DWC	2708		
VK2LE	2200		
VK4HM	1549		
VK3BNC	1405		
VK6TJ	1129		
VK8DA	544		

Section (h) Transmitting VHF

VK2DLE	5840	VK3AKJ	2443
VK3VSY	5377	VK3DS	4249
VK6YL	3392	VK6ZDR	224
VK2ZZX	2060		

Section (i) Home Station, Emergency Power

VK4ADE	1044	VK5NOD	867
VK6NAE	659	VK2JBM	791
		VK2BGS	527
		VK5AGX	434

Section (j) Home Station

VK5NY	762	VK3BEE	340
VK3CZ	632	VK3RH	230
VK3VH	610	VK6AP	140
VK3XB	285	VK4RAN	60

VK2PS	282	VK5AJG	Check
VK6WZ	273		
VK4VY	81		
VK3KS	70		

Section (j) Shortwave Listener

L40804	1050
L60336	399

The standard of logs submitted for this contest was generally quite high and where this occurs, it always makes the job of the contest manager so very much easier.

Amongst those submitted, at least two excellent ones were from VK3CNE, the call sign for the North East Radio Group, and the log from VK1WI. The log from VK3CNE was well set out and very nicely bound, as well as including photographs depicting the wind generators and solar panels. It seems that the idea of provision of natural power and the bonus points attached to it in this contest is beginning to catch on! At this point I feel that I should give credit to Steve VK5AIM, who suggested quite a few years ago that I should be policy of the WIA to encourage the use of natural power. From this suggestion came a Federal Agenda item, from the VK5 D vision, which was unanimously passed and I found great pleasure in being able to implement this policy by including the Natural Power proviso in the Field Day Contest rules. I am sure that the late John Moyle VK2JU, for whom the contest is named, would have approved wholeheartedly with this action.

Another very good computer generated log was submitted by VK4WITR, the Townsville Amateur Radio Club.

Some comments from the entrants follow:

The station was located on Mount Hecaton which is situated about 50 km from the City of Melbourne. Power was derived from two wind generators, one giving five amps the other peaking over 20 and consistently 10. There were four solar panels giving a total of eight watts into a 300 amp-hour battery. There was only a short period in the night when there was insufficient natural power and recourse was made to the petrol driven generator. Thank you for running the Field Day. We look forward to participating again next year. Ewen VK3BMV, has promised another wind generator and we plan to have an electric bicycle for the month of the night and to swap with a generator altogether — VK3CNE (it appears that VK3CNE is not the only station to consider the use of an electric bicycle, see photograph — FCM).

It was certainly an experience operating in the open for the weekend. Setting up antennas, setting them, pulling them down again, testing rigs, setting up tents and making a fire, I thought that the whole idea was worth working the pile-ups to BBO savings for this. I'll certainly be first on the list for next year JMWDF group with the Northern Central Radio Group. Thanks for an excellent weekend — West Tria for VEGC.

One man operation I live alone, so I don't have any support people around! I would like to record that all the stations listed in the attached log gave me a most enjoyable weekend. All proving to be most courteous and friendly. In the best traditions of amateur radio — VK8NAE. My wife Kath VK2ACR looked after the meals and some paper work — VK2DLE.

Those who did compete thoroughly enjoyed themselves as always. We have now had two years to become used to the rules as changed and would like to offer the following comments based upon those two years as well as the last 16 years of continuous operation as a club in this event. The change of rules to reflect that at VHF has been excellent as far as we are concerned. Definitely a good move. 2. Likewise, the inclusion of the VHF VHF bands, emergency power, etc. 3. As we have appeared as though there is nowhere near enough publicity given to this event. Indeed some stations indicated that they wouldn't have minded going in if it had been announced. It seems to us that out of all the contests this is a bit different — we look forward to next year — VK2BZD for VK2WGV.

Highlights were the absolute lack of noise compared to the home GTH, hearing and working stations who wouldn't make it at the home 'noise machine' Maurice FT8YA, and the CQ DD for a 547 both ways on 14 MHz, and DD HADG calling me on Saturday evening for a Jubilee 150 contest on the J150 Award — VK5SSJ. John has submitted a very comprehensive article dealing with his Field Day experience, the article which should be published in the near future — FCM).

The strength of signals received here in the top and were very good. The operators of VK3TMY were very disappointed at the low number of stations operating RTTY on emergency power in a portable capacity. VK3TMY fired a little better because of the poor conditions, 40 and 60 metres were unusable due to high GTH. — The particular Field Day was not considered very successful in addition to the poor conditions we managed to get a cup of tea supplied after the Field Day. FT8YD did to three watts and the windmill tower and beam got caught in a wind gust and collapsed during recovery operations — VK6T for VK2DLE.

I much enjoyed the John Moyle Contest. I will be in it next year for sure. I would think that more of the Section (f) entrants could manage Section (n), as emergency power is easy to set up. My home GTH has the batteries ready in

the shack and the solar panel on to keep them charged up at all times. Once again, thanks for the fun — VK3GGG.

I enjoyed the contest very much especially the friendliness of the other operators. Next year, I hope to enter Section (H) with Natural Power. Thanks for all your effort — VK3YH.

... this is my first John Moyle Field Day Contest and I did enjoy it... I feel that the VHF/UHF multiplier is a good idea but the distances are far too short for the multipliers — VK3YSY.

Thank you for again organizing the NFD. I have competed on a small scale for over 20 years, but my days are getting short, although I enjoy the day out. I think the move to March should be good overall. I intended to give you my vote for it last year, but I can't forget it... Is it possible to announce the date of the event much earlier — VK2JIM. (It is listed in the WIA Calendar and sent out with Amateur Radio at the beginning of the year, Arthur — FC3A).

Lead medal of the year should be awarded to the VK3 who, whilst transmitting on phone, refused to give any members except to stations operating on CW. A decision as to which section is to be entered should be made after the contest, and during the preparation of the log being submitted. Once again the VHF participation and scoring is catered for to an extent which is not justified in a National Emergency Test. If the VHF operators want to take part in the National Field Day, let them do so under the same scoring conditions as those who are attempting to make a genuine contribution — VK3ARZ (You might buy some arguments on some of these comments first — FC3A).

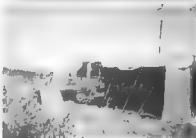
I was going to use an old shed on a relative's property at Hambrook, in the Blue Mountains. Having scouted out a couple of trees to hang a dipole, I was assured of many contacts! Saturday came, packed all into the car and drove up into the mountains at 4 pm ready to hoist a wire and get started around 6 pm. Horror of horrors — the shed still exists, BUT THE TREES DON'T! Nowhere to even hang a vertical. I'm sure next year there has to be a better way of making sure the sky-hook stays in place! Anyway, I very much enjoyed the contest although surprised that more stations were not active on 80 metres on Saturday evening — VK2JIM. (Thanks for your nice log Brian. Better luck next year, but I certainly make an interesting story — FC3A).

All operators at Bulls Head noted on the improved co-operation and general good fellowship between contestants during the contest. The usual crowding and frequency theft was absent and most contestants went out of their way, maybe even sacrificing some points to make the contest an enjoyable but still competitive one. Could this be the start of a new era of co-operation in contests? The 'bad habits' of past contests, I hope, may at last be buried. I hope you agree with me too, and trust you may make special mention of this fact in your post contest brief. I realise that the current propagation problems may have some bearing on this... All operators and their families who had occasion to participate in the operation at Bulls Head remarked on the valuable experience each one gained in either support or operation of a field communications exercise. Each one expressed an interest in participating next year and look forward to an improved result possibly even a winning score after we include the lessons learned this year to next year's event. Unfortunately, the weekend was not without mishap. The problem associated with the broken dipole, loosening bolts on the masts and the beams rotating with wind power, were relatively easy to overcome. However, I need to point out one problem with the logs. Despite detailed preparations and instructions to the various operators, one sheet of contacts was misplaced and the loss not noticed until after the weekend. (I think you know the feeling). This meant that nine serial numbers from 141 to 152 on our 80 metre log were, in fact, sent twice... Isn't that marvellous — Murphy. These problems only highlight the necessity of this contest. I would like to lose some vital information in the case of an emergency. All amateurs I have recently met expressed their gratitude to you for the honest and impartial attitude you have towards your role as 'umpire' for the various contests run by the WIA. Much has been said lately about a recent contest and I feel that you will maintain a genuine impartial, honest and, above all, a mature approach as now demonstrated recently. To assist you in your validation of both this entry, and others, I have enclosed two extra print-outs. The first is a complete list sorted on call signs. The second is an abbreviated call sign list showing those contacts on VHF and UHF including the remarks field and multiplier calculations as requested — VK3PJ Field Event Co-ordinator, VK1 Division, WIA (VK3W). Your remarks are appreciated. Put and together with comments from others provide me with encouragement. I do however, have to admit that I can make mistakes but I guess that applies to all of us from time to time. The important thing is that one doesn't continue to make them and that they are corrected. I hope that most of my mistakes are only small ones — FC3A VK3QX.

THE VK3CNE JOHN MOYLE CAMP

The Wind Generators. The one on the ladder was being steered off the wind... too much current was being generated. The ladder one is about six feet (1.8m) diameter and uses a wind-screen wiper motor and electric drill gear-box, the other is eight feet

(2.4m) and uses a car alternator with bike chain drive. There was plenty of wind and the larger unit gave up on the Sunday, luckily there was no cloud and the solar

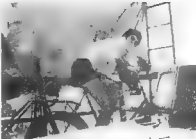


arrays just kept on working! That's them against the car in the other photograph. They were moved around during the day. It was morning when the photograph was taken.

THE WIGEN STATION VK8WCP FIELD DAY POWER



The Natural Power Source driven by Matthew VK6NSH.



Natural Power driven by Bob VK6KBL, who also built the device.



The VK5BPA Second Adelaide Scout ARC station on Anstey Hill, 15 km north-east of Adelaide. Two metre equipment to the left, HF to the right. The Field Day Contest can be a little slow, so it pays to have a good view — looking over the northern suburbs of Adelaide.



VK5BPA Club Leader, Bob VK5ADR, operating on Anstey Hill, 1216 feet ASL.



VK3YSY's station on top of Mount Glasborne.

RESULTS OF PRESIDENT'S CUP COMPETITION

The winner of the President's Cup for 1986 is Gil VK3GGG, who went to a great deal of trouble to operate from the Mount Buffalo Chalet. A short write-up describing Gil's activity was printed in *Amateur Radio*, May issue, page 30. This was only the third time that he had entered into a contest and he is obviously very keen on the CW mode.

Gil deserves the heartiest of congratulations for his effort including the fact that he also went to

Photographs by Peter Kean, Secretary VK3BPA

KENWOOD

pacesetter in Amateur radio

All New
Compact HF!

"DX-citing!"

TS-440S Compact high performance HF transceiver with general coverage receiver

Kenwood's advanced digital know-how brings Amateurs world-wide "big-rig" performance in a compact package. We call it "Digital DX-citement" — that special feeling you get every time you turn the power on!

Covers All Amateur bands

General coverage receiver tunes from 150 kHz-30 MHz. Easily modified for HF MARS operation.

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All modes built-in
USB, LSB, CW, AM, FM, AND AFSK. Mode selection is verified in Morse Code.

Built-in automatic antenna tuner (optional)

Covers 80-10 meters

VS-1 voice synthesizer (optional)

Superior receiver dynamic range

Kenwood Dyna Mix™ high sensitivity direct mixing system ensures true 102 dB receiver dynamic range

100% duty cycle transmitter

Super efficient cooling permits continuous key down for periods exceeding one hour. RF input power is rated at 200 W PEP on SSB, 200 W DC on CW, AFSK, FM and 110 W DC AM (The heavy duty PS-50 power supply is needed for continuous duty)

TU-8 CTCSS unit (optional)

Subtone is memorized when TU-8 is installed

100 memory channels

Frequency and mode may be stored in 10 groups of 10 channels each. Split frequencies may be stored in 10 channels to repeat operation

Superb interference reduction

8 shift, tunable notch filter, noise blanker, all-mode squelch, RF attenuator RIT/XIT, and optional filters fight QRM in today's crowded bands

MC-42S UP/DOWN mic. included

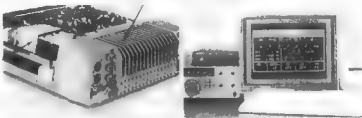
Computer interface port

5 IF filter functions

Dual SSB IF filtering

A built-in SSB filter is standard. When an optional SSB filter (YK-88S or YK-88SN) is installed, dual filtering is provided

Full or semi break-in CW; AMTOR compatible.



Optional accessories:

- AT-440 internal auto. antenna tuner (80m-10m)
- AT-250 external auto. tuner (150m-10m)
- AT-130 compact mobile antenna tuner (150m-10m)
- IF-232C IC-10 level translator and modem IC kit
- PS-50 heavy duty power supply
- PS-430/PS-30 DC power supply
- SP-430 external speaker
- MB-430 mobile mounting bracket
- YK-88S/88SN 500 Hz-270 Hz CW filters
- YK-88S 88SN 2.4 kHz 1.8 kHz SSB filters
- MC-60A/80/85 desk microphones
- MC-55 (8P) mobile microphone
- HS-4/5/6/7 headphones
- SP-40/50 mobile speakers
- MA-5/VP-1 HF 5 band mobile helix antenna and bumper mount
- TL-922A 2kw PEP linear amplifier
- SM-220 station monitor
- VS-1 voice synthesizer
- SW-100A/200A/2000 SWR/power meters
- TU-8 CTCSS tone unit
- PG-2X extra DC cable

Kenwood takes you from HF to OSCAR!



KENWOOD

Complete service manuals are available for all Trio-Kenwood transceivers and most accessories. Specifications and prices are subject to change without notice or obligation.

**Suggested List Price
\$1585 WITH AUTO ATU**

Power-Full...70 Watts!

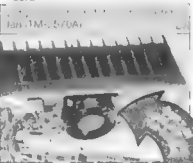
TM-2570A/2550A

Sophisticated FM transceivers

Kenwood sets the pace again! The new all-new "25-Series" brings the industry's first compact 70-watt 2-meter FM mobile transceiver. There is even an auto dialer which stores 15 telephone numbers! There are even two power versions to choose from: The TM-2570A 70-watt model, the TM-2550A for 45-watts.

- First 70-watt FM mobile (TM-2570A)
 - First mobile transceiver with telephone number memory and auto-dialer (up to 15 telephone numbers)
 - Direct keyboard entry of frequency
 - Automatic repeater offset selection
 - 23 channel memory for offset, frequency and sub-tone
 - Big multi-color LCD and back-lit controls for excellent visibility
- LIST PRICE
\$695

- Front panel programmable 38-tone CTCSS encoder includes 97.4 Hz (optional)
- 16-key DTMF pad, with audible monitor
- Centre-stop tuning — another Kenwood exclusive
- Frequency lock switch
- New 5-way adjustable mounting system
- Unique offset microphone connector — relieves stress on microphone cord



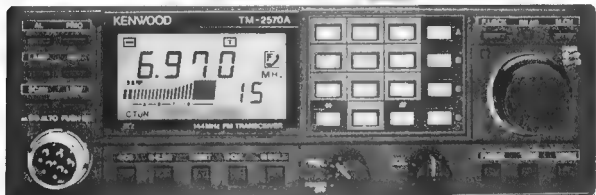
- HI/LOW Power switch (adjustable LOW power)
- Compact DIN size



Introducing ... Digital Channel Link

Compatible with Kenwood's DCS (Digital Code Squelch), the DCL system enables your rig to **automatically QSY** to an open channel. Now you can automatically switch over to a simplex channel after repeater contact! Here's how it works

The DCL system reaches for an open channel, remembers it, returns to the original frequency and transmits control information to another DCL-equipped station that switches **both** radios to the open channel. Microprocessor control assures fast and reliable operation. The whole process happens in an instant!



Actual size front panel

TRIO-KENWOOD (AUSTRALIA PTY. LTD.)

(INCORPORATED IN N.S.W.)
4E WOODCOCK PLACE, LANE COVE,
SYDNEY, N.S.W. 2066.
Ph. (02) 428 1455.

YOUR DEALER BELOW WILL GUARANTEE SATISFACTION

NEW SOUTH WALES

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ELECTRONICS — 84 WENTWORTH AVENUE, SYDNEY (02) 211 0988
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Further, beware of dealers not listed in this advertisement who are selling Tri-Kenwood communications equipment. A Kenwood products offered by them are not supplied by Tri-Kenwood (Aust) Pty Ltd and have no guarantee applicable.



VK3ATM/P Blue Mountain. The Human Generator and Solar Panels for the VHF/UHF Station.



Peter VK2EMV, Alan VK2DQP and Ray VK2CRT, participating for the St George Station.



Alan VK2DQP



Ray VK2CRT.

extra lengths to make sure the local newspaper had a write-up on the contest. So there we have some excellent PR work on behalf of our hobby. I also know that the manager of the Chalet was most impressed with G1's activities and thus even more avenues to publicise our hobby may be made available.

REMEMBRANCE DAY CONTEST 1985

This month, I unfortunately find I must finish these notes on a not so happy theme. I have recently been criticised by the Secretary, and apparently members, of the Orange Amateur Radio Club for having mis-handled logs in last year's Remembrance Day Contest.

Yes, I did make mistakes in connection with this contest whilst under some quite heavy pressure on a number of counts, however I went to some trouble, even beyond what might have been

considered absolutely necessary, to correct the mistakes which I had made.

It is rather a pity that the Club Secretary, himself a previous Federal Contest Manager, did not see fit to write direct to me to try and ascertain what had occurred.

Various other operators from the VK2 Division, whose logs were not listed in the original results, had written directly to me and I was able to overcome such problems. Each person received a personal letter from me apologising for the error. At least one other operator, who will not be named, has written to the Federal Office with complaints and criticism of my actions. I provide an answer to the main complaint in both letters.

There appears to be a total of three logs still not accounted for. These are stated to be VK2DQM and VK2ASY, according to one letter, or VK2DSM and VK2ASY as quoted in the letter from the Orange Amateur Radio Club in the May issue of AR. The other log referred to is that of VK2BHH.

The explanation is basically quite simple. The logs stated as missing for two of the entrants were for only 20 contacts.

This fact is indicated in both letters received. As such, these logs did not qualify as valid logs. If the rules are checked, Rule 5(d) for the 1985 contest stated, *Acceptable logs for all entrants must show a minimum of at least 25 valid contacts.* The end result of the complaints as far as missing logs are concerned is that only one log is unaccounted for.

Another criticism voiced by one complainant is the fact that I had the number of VK3 operators incorrectly listed. I quote, *surely a very careless mistake.* Yes, it is easy to see mistakes after the event, I know.

The mistake was, in fact, not basically mine as I was provided with the licensing figures from elsewhere. I suppose I should have double checked them with the Central Office of the Department of Communications.

My final statement on the matter of logs unaccounted for in this instance is that such time has elapsed since the contest that I now consider the matter closed. Had I been properly approached in the first place I might have been more inclined to go to the extra lengths to try and ascertain just what had occurred in the case of the one missing log referred to.

I might add a final somewhat happier comment that, from the very Division which could perhaps have been most irate about my serious error in the contest result, namely the VK1 Division, I have received nothing but courtesy and obvious understanding of a very embarrassing situation. I thank that Division for their forbearance. The VK2 Divisional Council received a letter of apology from me also.

73 de lan VK5QX

COLOMBIAN INDEPENDENCE CONTEST 1986

This contest will be held from 0000 UTC Saturday, 19th July to 2359 UTC Sunday, 20th July.

Modes are CW and Phone. Only Phone.

Categories:

a Single operator, single band, CW only, Phone only.

b Single operator, multi-band, CW only, Phone only.

c Multi-operator, single transmitter, multi-band, CW only, Phone only.

d Multi-operator, multi-transmitter, multi-band, CW only, Phone only.

(Note: There is only one single-band category: single band operators using 14 MHz compete only in this band).

Bands to be used are 1.8; 3.5; 7; 14, 21, 30 MHz.

Contest call for Phone — CQ HK Contest and for CW — CQ HK Test.

Exchange:

Phone — Signal report plus three numbers starting with 001 (eg 59001).

CW — RST plus three numbers beginning with 001 (eg 599001).

(VK stations will give the number 176 indicating the celebration of the 176 anniversary of Colombian Independence. (eg 59176 or 599176).)

Scoring: With HK stations — 10 points, With non-HK stations outside own country — 5 points; With stations within own country — 1 point.

Multipliers are the combination of different countries worked on each band plus different HK districts worked on each band.

Final score is the total QSO points times multipliers per countries and HK zones per band.

Logs should include Time in UTC, Station Worked, Report Sent, Report Received, multiplier, QSO Points. Separate sheets should be used for each band and each mode. Multipliers should be indicated only the first time they are worked on each band. A summary sheet should be included with the submission, indicating point computation, category of participation, name and address of operator, list of operators in the case of multi-operator stations, standard contest declaration. Summaries not including summary sheet will be counted as check logs.

Prizes: Every station which shows a minimum of 50 QSOs, at least 10 of which are HK stations for phone entries, or five for CW entries, will receive a certificate of participation. The overall winner of the contest and the winner in each category per band will receive a plaque or cup.

Conditions of entry: Each participant must communicate with at least 10 HK stations on Phone or five HK stations on CW in order to have an entry accepted by the contest committee. Each entrant must submit proof of a total of 50 QSOs, to be eligible for a prize. Only one contact per band with the same station is valid. Cross-band or cross-mode contacts are not valid.

Usual disqualification criteria applies.

Logs should be mailed no later than 30th August 1986, and logs received after 30th December 1986 will not be eligible for consideration, though they may be used as check logs.

All correspondence and logs should be addressed to: LCRA, C/o Dirección de Concursos y Diplomas, Apartado Aéreo 584, Bogotá — Colombia, Sur America.

? WHAT'S YOUR OPINION?

VHF enthusiasts, what are your thoughts on the Ross Hill Contest which is held each December/January?

Have you any thoughts on this Contest?

Participation is dwindling and entries are extremely disappointing.

The Federal Contest Manager engages in much work and thought to try to make this Contest attractive to all VHFers — are his efforts in vain?

If you have any thoughts which would help enliven this Contest, please write to the Federal Contest Manager, GPO Box 1234, Adelaide, SA. 5001.

Please do not leave it until the Contest is in operation — there is not long until the rules for the 1986/87 Contest will be published — write NOW!!

? SPREAD THE WORD

Have you built anything recently? Does it work? Why don't you share it with others? Maybe you think it too simple, or it doesn't look very pretty. So what? Share it with readers of *Amateur Radio* as a very simple project to you may be just what a newcomer is looking for.

CLARENCE D TUSKA — 1986-1985

The last surviving American pioneer of early organised amateur radio, Clarence D Tuska ex-1WD and 1ZT — co-founder and first secretary of the ARRL, as well as co-founder and first editor of QST magazine — passed away on 20th June 1985. He was 88.

At the age of 11 he was experimenting with wireless reception, using a coherer, graduating to an electrolytic detector. In 1908, as a high school student, and in need of pocket money, he built several simple receiving sets for consignment sale in a local hobby shop.



VHF UHF

— an expanding world

Eric Jamieson VK5LP
1 Quinns Road, Forreston, SA. 5233

All times are Universal Co-ordinated Time and
abbreviated as UTC

AMATEUR BANDS BEACON

FREQUENCY	CALL SIGN	LOCATION
50.010	JAZJOY	Mie
50.020	JASBYR	Japan
50.060	KH6BOI	Honolulu
50.075	VG56JX	Hong Kong
50.109	JDTARA	Japan
52.013	P33BPA	Lord Howe Island
52.020	FK8AB	Noumea
52.100	ZK2BX	Niue
52.200	VK8VF	Darwin
52.250	ZL3VHM	Manawatu
52.310	ZL3AMH	Hornby
52.320	VK6RTY	Wichman
52.325	VK2RNV	Newcastle
52.370	VK7RST	Hobart
52.420	VK2RST	Sydney
52.425	VK2RGS	Cunneah
52.440	VK6MTL	Townsville
52.450	VK6RST	Mount Lofty
52.460	VK6RPH	Perth
52.470	VK7RNT	Launceston
52.485	VK6RAS	Alice Springs
52.490	VK6RST	Busselton
144.400	VK6RTT	Mount Mowbrum
144.410	VK6RCC	Canberra
144.420	VK2RST	Sydney
144.435	VK6RST	Albury
144.480	VK8VF	Darwin
144.485	VK6RAS	Alice Springs
144.550	VK6RST	Mount Gambier
144.615	VK6RST	Port Harland
144.600	VK6RTY	Wichman
144.800	VK8VF	Mount Lofty
144.950	VK2RNV	Sydney
145.010	VK6RST	Perth
432.057	VK6RST	Busselton
432.180	VK6RPH	Necklands
432.410	VK6RTT	Wichman
432.420	VK6RST	Sydney
432.440	VK6RST	Brisbane
1298.171	VK6RST	Busselton
1298.420	VK2RST	Sydney
1298.550	VK6RST	Necklands
10300.000	VK8RST	Necklands

These notes are being prepared whilst touring through New South Wales and unless my next package of mail contains fresh information, will be prepared from existing information I brought with me.

FIVE METRES

I bring you the promised letter from John Allan VK5UL, who says in a note which was attached "I feel it is worthwhile to bring to the notice of newcomers to our ranks the fact that we have not always been so well informed in matters relative to VHF propagation. Also, I have intended the subject matter beyond my original intention to ensure that the significant contribution made by amateurs during World War II is not forgotten."

"Dear Eric I look forward each month to reading your contribution to AR, particularly any reference to new VHF DX records made by local enthusiasts. However, it was the weather map and associated comments sent by you column (AR April 1985), which evoked memories of events 43 years ago.

"My first transmissions pre-war were made on the old five metre band and I, along with others operating on that band, accepted the fact that the best DX we could expect was line-of-sight, give or take a mile or two. In 1936, we were made aware of sunspot peaks when the 10 metre band opened up world-wide. Never-the-less, we still retained the notion that VHF had limited range.

"The thought that prompted this memo is the amazing good fortune of present day beginners, who, through your column and other sources, are able to acquire a good knowledge of the natural phenomena associated with VHF propagation. They could not be blamed for thinking that such knowledge has always been available. This of course is not so and in an endeavour to fix a time when such knowledge, based on actual experience,

first became available in the country, I recount my own initial contact. Other operators may have experienced anomalous VHF propagation prior to 1942 and it would be interesting to read of this in AR.

"Early in 1942, I completed the RDF (Radar) Course at RAAF Station, Richmond, NSW after a short stint with a Maritime Reconnaissance Squadron, followed by the installation of the Air Warning System for Brisbane. I was posted to the Directorate of RDF at Air Force Headquarters, in Melbourne. Upon arrival, I was greeted by Roger Choate VK6RK, and John Moyle VK2JU, whom I had had the good fortune to meet the previous year in Laverton.

"The Directorate had been recently established under the command of Wing Commander George Pither, who in the post-war period became VK3VX. There were about nine of us in the Directorate with the Wing Commander the only permanent type. The rest of us were volunteers, mainly from the radio industry and the majority held amateur call signs.

"One morning in September 1942, the Wing Commander called me into his office. He had two charts on his table, one from Fighter Sector, Sydney and one from the Navy. The chart from Fighter Sector displayed the plot of a ship's course compiled from information received from the Radar unit on Gebo Island, ranging out to some 200 miles plus. The normal range for surface vessels from this unit was typical of what could be expected, ie about 30 miles. The plot from Gebo very closely followed the course prepared by the Navy from the ships log after its arrival in Sydney from Auckland. The very serious aspect of this phenomenon was the fact that under long range surface conditions there was virtually no air warning.

"For obvious reasons, the Wing Commander was very concerned and I was ordered to find an explanation for this extraordinary departure from the norm. Nobody in the Directorate could help except that one officer (another amateur) remembered seeing an article in QST magazine (Circa 1936/7) suggesting that the weather was in some way involved in long range anomalous VHF propagation.

"Armed with the information, I approached the Weather Bureau in Melbourne. This was not going to be easy. In 1942, anything to do with RDF was top secret which made it difficult to explain the nature of the problem without transgressing secrecy. The two meteorologists assigned to the project were most sympathetic and understanding. Fortunately, one remembered that temperature inversions extended the range of lighthouses at night, far beyond the distance shown on navigation charts. A check of weather conditions for the period under examination ruled temperature inversions out. However, there was one pattern that seemed to fit consistently and that was the existence of high pressure systems. The meteorologist explained to me the mechanism of the subsidence inversion generally associated with high pressures and subsequent events over the following weeks proved this to be the source of the trouble.

"There was nothing much at that stage that we could do about it. It did resolve the fears that we had that there may be some problems technically with regard to the equipment and/or our technique. It must be remembered that we were involved with a new technology and had a lot to learn. What we did not realise at the time was the fact that we were helping to make radar history in this country. Incidentally, when I returned to the Directorate with this information, it created something of a furor amongst the amateur fraternity who correctly foresaw the possibility of long range QSOs in the post war period. Subsequent events proved them right.

"There was an interesting sequel. Each day the meteorologists released a balloon with a radiosonde attached which transmitted back information on upper wind direction and velocity, the tracked it with a theodolite, but on one occasion the balloon could disappear after 5000 feet. Could our radar track their balloon? The RAAF had no radar around Melbourne but an Army AA unit at Williamstown agreed to the use of their radar. I had grave doubts that the small package carried by the balloon could reflect sufficient energy to be effective. Not having had any previous experience with the sort of thing, I decided to use two resonant dipoles set at right angles in a piece of garden stake and see what eventuated. It worked very well indeed and was able to track the balloon far beyond any range or height that they had previously experienced with their optical system.

"John goes on to say he was eventually posted 2 IC (Radar) to another amateur Wing Commander Morrie Myers VK2VN, who was Chief Signals Officer, 10 Operations Group, later to become First Tactical Air Force, RAAF, spending 16 months on service in New Guinea and the islands. All the four amateurs mentioned above are now silent keys. Thank you for your interesting letter, John.

SIX METRES

A letter to hand to my holiday shack from Lindsay VK4ALM, accompanying his six metres standings update says there has been a shortage of JA so far this year, with only 10 being worked. There has been a marked decline in the reception of the Russian TV sound on 49.750 MHz, three times to S8/9 and most times S1/3. Other than these, VK1 and VK2 were worked on 29/3; VK2 and VK3 on 24/4; VK8, 3 and 2 on 25/4 and VK2 on 7/5.

The last EA session saw Lindsay adding ZMBOY and VK9L to his countries total. Some comments on the Ross Hut Contest have been filed for future reference. Thanks for your letter, Lindsay.

SIX METRE AWARDS

John VK4ZJB, as well as sending a standings list update, includes a list of awards he has received, which shows what can be done even with Channel 0 on your back door WAJA (JARL) No 931 issued 24/5/82 for all 47 JA Prefectures, including Okinawa, JCG (JARL) No 42, 9/11/81 for 100 JA Gun areas, JCC-100 (JARL) No 493 20/12/78 for 100 JA cities, JCC-200 (JARL) No 111, 23/2/81 for 200 JA cities, JCC-300 (JARL) No 55, 28/2/83 for 300 JA cities, with JARL 10 being worked for all 10 JA areas, 50 MHz-100 (JARL) No 7, 21/7/82 for 100 JA QSOs, VU-100 (JARL) No 6, 30/8/83 for 1000 JA QSOs both these on 52 MHz, W5 (WIA) No 90, 10/11/70 for VK1-9 on 52 MHz; VFHCC (WIA) No 78, 3/2/71 for 100 VKs on 52 MHz; WAWKA (WIA VHF) No 19, 19/1/85 as required by WIA, WAD (NZART VHF) No 20, 22/8/81 for all 10 JA areas, Yokohama DX Club No 380, 2/12/82 for two-way contacts with 16 stations in Yokohama City, WJDXA — Western Japan DX Award No 132, 11/2/81 for working stations in each of the five JA4 prefectures, plus five more in the JA4 area, One Day AJD — The Hime: Amateur Radio Club Award No 1586, 27/11/80 (Iss: for JARL, AJD and working stations on 52 MHz, 22/8/81 for all 10 JA areas, 50 MHz-100 (JARL) No 7, 21/7/82 for 100 JA QSOs, VU-100 (JARL) No 6, 30/8/83 for 1000 JA QSOs both these on 52 MHz, W5 (WIA) No 90, 10/11/70 for VK1-9 on 52 MHz; 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placed on operating during television hours. John also has 28 countries confirmed on six metres, six USA States and five other countries heard but no QSO. The USA States worked are Texas, Arizona, California, Washington State, Alaska and Hawaii. John concludes, with a pertinent comment: "There are probably a lot more States which have been worked in yet unpublished logs too!" I am doing my best to get these operators to send in their logs.

From *The Short Wave Magazine* of March 1986, sent to me by Steve VK5AIM, which reports quite a few operators came on the air for their relaxed provisions on six metres which commenced on 1st February 1986. Early reports speak of relatively high noise levels, although what was surprising that initial tests showed on four metres there was an advantage of 3 dB (presumably signal-level) but with slightly higher noise floor levels.

Of course, there are so many variables that it would be difficult to be that specific. One would expect under any form of Es conditions that 50 MHz would be generally superior and with more noise than at 70 MHz. Thus equipment, antenna and location parameters need to be considered.

The same magazine stated "The Irish Government was prepared to issue 50 MHz permits to a small number of qualified experimenters. Subsequently, E2W and E9D, received their permits and a total of 20 will be issued for operation between 50.000 and 51.750 MHz outside peak television hours. Likewise, GT1VW has been granted a 50 MHz licence for use outside television hours."

It is very encouraging to see a continuing availability of 50 MHz from the European sector and, providing TVI problems are not great, we may see some other countries following suit in due course.

THE AURORA

I mentioned in a previous issue some of the effects of the very large Aurora last February, and how it had enhanced signals particularly on two metres. It appears the effects were felt world-wide. Last month I mentioned that Bill Tynan W3XQ, was going to say more later so you may be interested to hear what he had to say in *World Above 50 MHz*, in QST for May 1986.

"By now, most VHFers and many other amateurs have heard of, or experienced the tremendous geomagnetic event that peaked on 8th February. For HF operators, washed-out bands were the result. But for those of us who call the world above 50 MHz our home, it produced some of the most exciting Auroral conditions in many years. All the VHF bands from six metres through 70 cm are known to have been affected."

"The numbers put out by the National Oceanic and Atmospheric Administration (NOAA) are impressive, to say the least. By 5th February, the 2800 MHz solar flux rose to 103, not a particularly lively reading for those of us who became accustomed to the 200 plus figures during the last solar peak, but unusual for this low level period. Readings in the upper 60s and the lower 70s have been common in recent months. But the real story is told by the magnetic indexes. The Fredericksburg A index can go as low as 0, and quite frequently reaches values of 30 and 50 during magnetic disturbances. On 8th February, it hit 208. The A index is an average for a 24-hour period, with those taken at Fredericksburg, Virginia and Anchorage, Alaska regularly reported in the weekly NOAA report of solar and geophysical activity. The other magnetic index, the K index, is recorded every three hours at the same locations as well as at Boulder, Colorado. . . It employs a different scale than does the A index. In this case, a scale of 0 to 9 is used. A value of nine is very rare indeed, but it was reached during two three-hour periods at Fredericksburg on 8th February. See chart which allows us to trace the progress of the Aurora on the VHF bands).

"The magnetic fireworks were caused by a spot group that began its energetic activity 3rd February with what is termed an M2/1B class flare. Several strong radio noise bursts were recorded, the most intense one a 245 MHz value of 51.000 at 1013 UTC 7th February. That value normally runs in the low hundreds, but often

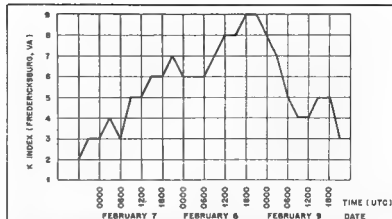


Figure 1 — K Indices for 7th to 9th February 1986. Source: Preliminary Report and Forecast of Solar Geophysical Data, 11 February 1986. (graph by W3EP). Reproduced in *Amateur Radio* courtesy QST magazine, May 1986.

reaches a few thousand during a solar storm.

"The bands from six metres through 70 cm went wild. I first got wind of what was to happen when I received a morning phone call from G3CQJ Brian said an Aurora was in full swing there, and that his countrymen, who had received six metre operating privileges just one week earlier, were having a great time. I phoned KITOL, who was later heard twice by Swedish stations, SM6PU. He also heard the GB3SIX beacon on 50.018 MHz, but no two-way contacts were made across the pond. Hundreds of Auroral contacts were made during the afternoon and evening of 8th February, with openings from much of the US to several South American countries being reported. FY7THF, the French Guiana beacon on 50.038 MHz was heard widely around midday. It was HC2FG, the Ecuador beacon on 50.100, number of transcontinental contacts were made, apparently by Auroral-E, which was almost certainly responsible for KITOL being heard in Sweden and his reception of the G beacon. Auroral-E often forms during or after an Aurora, most frequently in the more northern latitudes. Signals propagated by this mode customarily do not exhibit the buzzy sound usually present on Auroral signal. KH5BAA and KH5HL worked many West Coast stations and some as far east as Minnesota and Texas."

"G3CQJ, reported using 10 watts to work northern G stations in the UK, as well as PA0XMA. JA1VOK, reported that after hearing television signals from VK on 51.750 MHz, he went on to work V4KTL and V4HFX. Signals reached 5V +20."

It appears the two metre space was very lively in the US due to the 8th February Aurora and seems to parallel fairly closely with our observations. A possibly new Aurora record for North America was set at 1346 miles (the US still uses miles), between KA1ZE and W8DQRL, the previous best being 1222. Two metres was described as sheer bedlam with signals reaching from the bottom end to over 144.250 MHz."

On 70 cm, the same situation existed. Another possible North American Aurora record would be at 11815 miles between W8SLUA and W3NY4. Present reports tend to indicate nothing affirmative whether the Auroral propagation extended to 23 cm. It seems everybody was too busy with contacts on the other bands to give 23 cm a serious try.

The February Auroral spectacular was certainly such in the UK according to *The Short Wave Magazine*. Massive coverages of areas were made mostly on two metres. G14OMK, worked 18 countries and G4FRX, 23 countries including the Far Islands.

THE VK8QB EFFORT

I promised some time ago to pass on to you a list of the countries worked on six metres by some of our outstanding stations. I have pleasure this month to list the efforts of Graham Baker VK8QB (formerly of Darwin and now of Canberra), who submitted a very professionally laid out list, all in alphabetical prefix order and with all the required details — a very neat effort Graham and for which I thank you

- 1 Tonga AJ35T 12/4/82
- 2 American Samoa A82A 34/82
- 3 China BY5RA 26/8/84
- 4 Micau CR8AJ 24/8/78
- 5 Nauru G21AA 14/8/78
- 6 Philippines W8SLU/DU5 11/10/77
- 7 New Caledonia FK8EB 7/1/84
- 8 Tahiti F608R 3/4/82
- 9 Solomon Islands HA4DX 26/4/79
- 10 New Hebrides G3UKM 9/1/78
- 11 Japan JA1EF 15/8/81
- 12 Ogasawara JD1ADP 5/5/79
- 13 Mirami Tori-shima JD1YAA 31/3/84
- 14 Eastern Caroline Islands KC8IN 23/3/80
- 15 Guam KG8DK 4/3/78
- 16 Puerto Rico KG8RB 24/8/78
- 17 Johnston Island KH3AB 26/3/81
- 18 Hawaii KH6FO 28/8/81
- 19 Marshall Islands K88BU 26/7/79
- 20 Papua New Guinea P298B 11/6/78
- 21 Kiribati T32AB 4/4/84
- 22 Australia VZSLP 10/4/82
- 23 Lord Howe Island VK9LC 29/12/85
- 24 Norfolk Island VQ9NS 3/4/82
- 25 Christmas Island VK9XV 14/3/80
- 26 Cocos Island VK9ZV 22/11/81
- 27 Wallis Island VK9ZB 28/11/85
- 28 Brunei V5SDX 26/1/80
- 29 Hong Kong V5SAB 5/3/80
- 30 India VU2JPN 7/3/81
- 31 USA AA6S 17/4/79
- 32 Indonesia YC1B2 22/2/80
- 33 New Hebrides G3UKM 9/1/78
- 34 Venezuela DL32M/YV5 5/4/82
- 35 St Helena ZD7BW 22/3/82
- 36 Nive ZK2RS 14/4/84
- 37 New Zealand ZL1MO 31/12/82
- 38 Kermadec Island ZM8OY 10/12/85
- 39 FY 325LT 2/4/82
- 40 Kenya ZK4CS 28/3/82
- 41 Nepal 9N1BMK 2/5/79
- 42 Trinidad 9Y4LL 10/4/82

That is a very impressive total and should give readers a chance to see what they have missed through living elsewhere than Darwin! The inclusion of the dates will give you a chance to compare your logs. Graham has also included a photocopy of the back and front of every QSL card which allows for direct certification of a correct entry in the standings list.

I am still waiting for some Ross Hull Contest feedback — practically nothing has come in so far.

Closing with the thought for the month: *The richest man in the world is not the one who still has the first dollar he ever earned. It is the man who still has his first friend.* 73. The Voice in the Hills.

AMING HIGH WITH COMMUNICATIONS ACCESSORIES FROM GFS

WAY OUT FRONT IN AIRBAND PORTABLES THE NEW ATC-720X

- ALL COIN OPS
- AERO C. U.S.
- HOME B. U.S.
- EMERGENCY COMMS
- RESCUE OPS
- AIR TRAIL SHITS
- GL DERS
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220 CHANNEL NAV COM — PLUS 4 MEMORY SCAN PORTABLE TRANSCEIVER

The new ATC-720X provides experienced airband communications for a wide range of applications. Its most important includes promoting the peace of mind which comes from knowing you have an emergency back-up transceiver with you if it is supplied complete with a 12-hour antenna, antenna batteries and carrying strap.

\$749 S.T. \$14 PAP \$880 Inc. S.T.

AR-2002

Continuous Coverage 26-550 800-1300 MHz Scanner



If you want continuous coverage AM/FM wide & narrow with 20 memories we suggest you choose the AR-2002 from GFS.

\$799 +\$14 P&P

LOW LOSS FOAM DOUBLE SHIELDED COAXIAL CABLE

LOSS IN DB/30 METRES

TYPE	100 MHz	200 MHz	400 MHz	900 MHz
5D-FB	1.86	2.70	3.90	6.00
8D-FB	1.20	1.74	2.58	3.90
10D-FB	0.99	1.44	2.10	3.30
12D-FB	0.84	1.23	1.80	2.79
RG-8/AU	2.20	3.20	4.70	8.00
LDF-450	0.75	1.40	1.80	2.50

FB SERIES CABLE & N CONNECTORS

CABLE		N CONNECTORS	
5D-FB	\$3.20	NP-5D/FB	\$13.20 ea
8D-FB	\$4.60m	NP-8D/FB	\$13.60 ea
10D-FB	\$7.00m	NP-10D/FB	\$14.20 ea
12D-FB	\$9.60m	NP-12D/FB	\$15.10 ea

HF-VHF SWR-POWER METER



HS-260

Compact two power ranges 0-12 Watts & 0-120 Watts switchable VHF with lighted meter **\$71 plus \$8 P&P**

NEW HS-VKS 5 BAND HF VERTICAL

Fully self supporting & complete with self supporting ground radials 80-40 20 15 & 10 metres **\$299 and \$14 P&P**

NEW BROADBAND OMNIDIRECTIONAL ANTENNA 25 TO 1500 MHz

The new 30 is one of the latest general or P-coverage for VHF/UHF omnidirectional antennas. It provides continuous operation on 25 to 1000 MHz & is a 30 to 1500 MHz scanning receiver. Also capable of transmitting on 6m, 2m, 70cm, 33cm & 23cm bands supplied.

PRICE \$229 \$14 P & P D-130

ANTENNA MATCHER FOR CONTINUOUS HF COVERAGE-MFJ-9410

Apart from being extremely versatile the MFJ-9410 includes a 6 position coarse switch SWR power meter 4:1 Balun and will feed balanced line single wire and coaxial antennas

\$384 +\$14 P&P

2 KW DUMMY LOAD



MFJ-250 low SWR to 400 MHz 2 KW PEP supplied with transformer oil

\$109 +\$14 P & P

EXPANDED RANGE OF HF-VHF-UHF ANTENNAS



BROADBAND ANTENNAS

100 SP 100 SP 100 SP 100 SP

\$237 +\$14 p&p

\$164 +\$14 p&p

HF BROADBAND DIPOLES

100 SP 100 SP 100 SP 100 SP

\$237 +\$14 p&p

\$164 +\$14 p&p

HF BROADBAND DIPOLES

100 SP 100 SP 100 SP 100 SP

\$237 +\$14 p&p

\$164 +\$14 p&p

HF BROADBAND DIPOLES

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HF BROADBAND DIPOLES

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\$237 +\$14 p&p

\$164 +\$14 p&p

HF BROADBAND DIPOLES

100 SP 100 SP 100 SP 100 SP

\$237 +\$14 p&p

\$164 +\$14 p&p

HF BROADBAND DIPOLES

100 SP 100 SP 100 SP 100 SP

\$237 +\$14 p&p



BROADBAND OMNIDIRECTIONAL ANTENNAS FOR SCANNERS

100 SP 100 SP 100 SP 100 SP

\$237 +\$14 p&p

\$164 +\$14 p&p

HF BROADBAND DIPOLES

100 SP 100 SP 100 SP 100 SP

\$237 +\$14 p&p

\$164 +\$14 p&p

HF BROADBAND DIPOLES

100 SP 100 SP 100 SP 100 SP

\$237 +\$14 p&p

\$164 +\$14 p&p

HF BROADBAND DIPOLES

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HF BROADBAND DIPOLES

100 SP 100 SP 100 SP 100 SP

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SCAN THE BANDS WITH OUR MICROCOMM SX-155 PROGRAMMABLE POCKET SCANNER

This microcomm scanner provides coverage of 26.32 68.98 138.176 and 380.514 MHz. It is a security of less than 0.5 uV. Four bands of 20 memory channels.

Total of 160 memories. High scan speed of 16 FH SEC. Auto search and store mode. Priority channel 4 hour timer on supply. No. cad. batteries. 24 hour clock. Selectable Scan Search. 3-way 10/10/2 seconds. Includes Nicads charger. Carrying case and antenna.

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What is stronger than wire of equivalent cross section non corrosive non conductive and has virtually no elongation?

NEW DEBEGGLASS WIRE

Now you can clean without having to break the wires with dozens of egg insulators or worrying about them corroding away due to a salty atmosphere. Our Debeglass wire is available in 3 made using continuous filament boron glass can be packed in UV stabilised vinyl chloride. Compare the figures below.

DB 4 (4mm)				DB 5 (5mm)			
Length (m)	Weight (g)	Resistance (ohms)	Price (\$)	Length (m)	Weight (g)	Resistance (ohms)	Price (\$)
1	1.5	1.5	1.5	1	2.5	2.5	2.5
10	15	15	15	10	25	25	25
100	150	150	150	100	250	250	250

DB 4 4mm 30.61m DB 5 5mm 30.61m DB 4 4mm 30.61m DB 5 5mm 30.61m

DB 4 4mm 30.61m DB 5 5mm 30.61m DB 4 4mm 30.61m DB 5 5mm 30.61m

DB 4 4mm 30.61m DB 5 5mm 30.61m DB 4 4mm 30.61m DB 5 5mm 30.61m

DB 4 4mm 30.61m DB 5 5mm 30.61m DB 4 4mm 30.61m DB 5 5mm 30.61m

DB 4 4mm 30.61m DB 5 5mm 30.61m DB 4 4mm 30.61m DB 5 5mm 30.61m

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DB 4 4mm 30.61m DB 5 5mm 30.61m DB 4 4mm 30.61m DB 5 5mm 30.61m



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Colin Hurst VK5HI

8 Arndell Road, Salisbury Park, SA, 5109

OSCAR-10 APOGEE
JULY 1984

DAY	ORBIT #	APOGEE L.T.C HHMM:SS	SATELLITE CO-ORDINATES LAT DEG	LON DEG	BEAM HEADINGS-----							
					SYDNEY		ADELAIDE		PERTH			
					AZ DEG	EL DEG	AZ DEG	EL DEG	AZ DEG	EL DEG		
1st July												
182 2253	0414:42	-22	323						256	11		
183 2254	1554:15	-22	139		99	28	184	9				
2nd July												
183 2253	0333:46	-22	314				258	1	268	28		
183 2256	1513:19	-22	129	183	12	189	2					
3rd July												
184 2297	0252:58	-22	385	249	-1	255	9	265	28			
184 2298	1432:23	-22	128	188								
4th July												
185 2299	0211:54	-22	295	254	6	268	17	278	37			
5th July												
186 2301	0138:58	-22	286	258	14	265	25	275	45			
6th July												
187 2303	0858:02	-21	277	263	22	273	33	282	54			
7th July												
188 2305	0809:06	-21	267	268	38	276	41	292	63			
188 2307	2729:08	-21	258	273	38	283	58	389	71			
8th July												
189 2309	2247:12	-21	248	286	47	293	58	348	77			
9th July												
190 2311	2206:16	-21	239	288	56	387	66	25	76			
10th July												
191 2313	2125:20	-21	229	388	64	338	72	54	78			
11th July												
192 2315	2044:24	-21	228	319	71	5	74	69	62			
12th July												
193 2317	2003:28	-21	211	352	78	37	78	78	53			
13th July												
194 2319	1922:32	-21	201	29	73	57	64	85	44			
14th July												
195 2321	1841:36	-21	192	53	67	78	56	98	35			
15th July												
196 2323	1808:38	-21	183	67	59	78	47	95	27			
16th July												
197 2325	1719:42	-21	173	77	58	85	39	99	18			
17th July												
198 2327	1638:46	-21	164	93	42	98	38	183	18			
18th July												
199 2329	0418:19	-21	339					258	-2			
199 2328	1557:58	-21	154	89	33	95	22	188	2			
19th July												
200 2330	0337:21	-20	338						255	6		
200 2331	1516:54	-20	145	94	25	188	14					
20th July												
201 2332	0256:25	-20	328				185	6	259	14		
201 2333	1435:58	-20	136	99	16							
21st July												
202 2334	0215:29	-20	311				253	3	263	22		
202 2335	1355:02	-20	126	183	8	118	-1					
22nd July												
203 2336	0134:33	-20	381	252	8	258	11	268	38			
203 2337	1314:04	-20	117	188	1							
23rd July												
204 2338	0053:37	-20	292	256	8	263	19	273	39			
24th July												
205 2340	0012:41	-20	283	261	16	268	27	288	48			
205 2341	2331:45	-20	273	266	24	274	35	288	57			
25th July												
206 2344	2258:47	-20	264	271	32	288	43	388	65			
26th July												
207 2346	2209:51	-20	254	277	41	288	52	328	72			
27th July												
208 2348	2128:55	-20	245	284	49	299	68	356	76			
28th July												
209 2350	2047:59	-20	236	294	58	316	67	34	73			
29th July												
210 2352	2007:03	-20	226	388	65	343	71	57	66			
30th July												
211 2354	1926:07	-20	217	331	71	16	71	78	58			
31st July												
212 2356	1845:11	-19	288	5	73	42	67	78	69			

NATIONAL CO-ORDINATOR

Graham Hurditch VK5AGR

INFORMATION KEYS

AMSAT AUSTRALIA

Control VK5AGR

Amateur Check-In 0945 UTC Sunday

Bufile Commences 1000 UTC

Winter 3.885MHz - Summer 7.064MHz

AMSAT PACIFIC

Control JIANG

1100 UTC Sunday

14.305MHz

AMSAT SW PACIFIC

2200 UTC Saturday

21.28028 MHz

Participating stations and listeners are able to obtain basic orbital data, including Keplerian elements from the AMSAT Australia Net. This information is also included in some WIA Divisional Broadcasts

ACKNOWLEDGEMENTS

Material has been received from Bob VK3ZBB, Graham VK5AGR, Uosat BULLETINS and AMSAT-TELEMAIL

EXTRACT FROM JUNE COLUMN

Readers of this column will remember the follow up item in the last issue of *Amateur Radio*.

AMSAT-AUSTRALIA DONATION TO PHASE-3 PROGRAM

Following the success story for 1983 that the AMSAT-Australia Newsletter has been, Graham VK5AGR, recently forwarded a cheque to AMSAT-DL for an amount of \$5000, as a donation towards the Phase-3 Program. The \$5000 was made up by \$3000 from AMSAT-Australia Newsletter Subscriptions, plus donations from the Software Service and proceeds from the PC-1248 Pocket Computer Sales, supplemented by a \$2000 donation by the WIA (SA Division) being a significant part of the profits of the 400 VK5 two-metre pre-amplifiers that were marketed by the Equipment Supplies Committee of the SA Division. A large percentage of these pre-amplifiers were purchased by listeners to, and operators of OSCAR-10. This sizable donation is a credit to the untiring efforts of Graham VK5AGR to whom we are all heavily indebted.

Recently, Graham VK5AGR, received a letter from Karl Melnzer DJ4ZC, on behalf of AMSAT-DL. To quote a section of that letter from Karl...

"First of all let me express our sincerest thanks for the donation of DM 7870, as a contribution to the Phase-3C project. The money has been dedicated to the purchase of the Helium Bottle in Phase-3C. The cost of the Helium Bottle was approximately DM 8000."

"Will you also please convey our sincerest thanks to the Wireless Institute of Australia, who contributed part of the amount."

Therefore, AMSAT-Australia members can be justifiably proud in having contributed materially to the Phase-3C spacecraft about to be launched later this year, by supporting the Newsletter during the past 12 months. Members can look forward to a further significant contribution this coming year as there are currently 177 subscribers to the Newsletter (as at 6th May 1986).

Congratulations to all concerned — Take a bow AMSAT-AUSTRALIA !!

AMSAT-AUSTRALIA NEWSLETTER

Graham VK5AGR, the National Co-ordinator of AMSAT-Australia is now producing a monthly newsletter containing updated satellite news, orbital predictions, Keplerian data and operating hints and techniques. The objective of the newsletter is to keep the amateur populous informed on the latest information available and to realise funds for the funding of projects or the purchase of an item of hardware for a future amateur satellite project, eg Phase 3C, Phase 4 or whatever. The cost of the Newsletter is \$15 and cheques made payable to WIA (SA Division), should be forwarded to Graham VK5AGR, QTHR.

OSCAR 10 APOGEE AUGUST 1984

DAY	ORBIT #	APOGEE U.T.C. HHMM:SS	CO-ORDINATES LAT DEG	LON DEG	I-----BEAM HEADINGS---						PERTH	
					SYDNEY		ADELAIDE		ADEL		PERTH	
					DEG	EL	DEG	EL	DEG	EL	DEG	EL
8th August												
212	2366	1845:11	-19	209	5	73	42	67	78	49		
1st August												
213	2350	1004:13	-19	198	36	78	59	68	84	48		
2nd August												
214	2368	1723:17	-19	169	56	63	78	52	98	31		
3rd August												
215	2362	1642:21	-19	179	68	55	78	43	94	23		
4th August												
216	2364	1681:25	-19	178	77	46	85	35	99	15		
5th August												
217	2366	1528:29	-19	161	63	38	98	26	183	6		
6th August												
218	2367	8388:08	-19	336					253	-8		
218	2368	1439:31	-19	151	89	29	95	18	108	-1		
7th August												
219	2369	8219:04	-19	326					238	8		
219	2378	1358:35	-19	142	94	21	188	18				
8th August												
220	2371	0138:08	-19	317			251	-3	262	16		
220	2372	1917:39	-19	132	99	13	185	3				
9th August												
221	2373	0857:12	-19	380			256	5	267	24		
221	2374	1236:43	-19	123	184	3						
10th August												
222	2375	0916:16	-19	299	255	2	261	12	272	32		
222	2376	1155:47	-19	114	188	-9						
222	2377	2535:18	-19	289	169	-8	266	28	277	41		
11th August												
223	2379	2254:22	-18	279	264	18	272	29	284	58		
12th August												
224	2381	2213:26	-18	278	269	26	278	37	294	58		
13th August												
225	2383	2132:38	-18	261	275	34	285	45	389	64		

Companded Single Sideband (ACSSB) signals through the Mode-L transponder. The experiments are the first phase of Project Link-up, which will provide bulletin transmissions on OSCAR-10 for relay via terrestrial FM repeaters. ACSSB and FM are being used (instead of standard SSB) to maximise the audio quality of the Project Linkup downlink signal. The ACSSB signals can be received with normal SSB equipment, whilst those with ACSSB receivers will experience enhanced signal-to-noise ratios. The FM transmissions will provide a basis for evaluating the efficiency of ACSSB. Veri Reportable WAZLQO, is currently acting as the Mode-L experiment station. H equipment includes a water-cooled 7289 amplifier from Chip Angle N8CA, and a 5.5 metre, fully steerable dish with a feed system by Mike Stull K6MYJ.

The ACSSB equipment was designed and built by Project OSCAR President, Jim Eggleston WB6JUN, as part of Project Companion, a joint Project OSCAR, ARRL, and AMSAT project. Stations wishing to receive the Project Linkup bulletins will not need such complicated equipment. The theme of the project is simple access to Mode-L and Mode-S bulletins, and a small 70 cm Yagi with GaAsFET preamplifier and a standard 70 cm receiver should provide a decent received signal. Initial results were favourable. The signal-to-noise ratio observed varied between 15 and 17 dB. The first trial bulletin transmission using FM was received with nearly full-quality by K0RZ. AO-10 Mode-L may, in the future, be used to transmit bulletins through gateway stations to terrestrial FM repeaters for local consumption. There are no plans to use Phase-3C Mode-L for this function. Spectrum and power demands on Phase-3C Mode-L will probably rely on FM use. However, Mode-S FM bulletins are a possibility and are being studied. Project Linkup organisers are now actively soliciting Mode-L gateway stations and connecting repeaters for the first trial on-the-air bulletin relays tentatively slated for May. Interested individuals should write to Project Linkup, PO Box 177, Warwick, NJ, 07960. A business sized SASE will speed your reply.

JAS-1 JAPAN'S FIRST AMATEUR SATELLITE is scheduled for August 1988! The satellite is being built by K. Watanabe, J2JX, from JARL. News and other JARL material, 2 March 1988.

Transponders

Both analog and digital, J mode (2m uplink, 435MHz downlink). LSB is used for the analog uplink, and FM for the digital uplink. The downlink is USB. Depending on battery condition and schedule (available via JARL telephone service), either analog or digital transponder will operate (maybe both together on weekends). There may be special times scheduled for SSTV, FAX, and RTTY only.

Analog operation will be limited to line-of-sight, real-time QSOs, but digital mode will permit bulletin board (store-and-forward) operation. Uplink EIRP required about 100W. Uplink antenna gain of 10dBi transmitter power of 10W should be satisfactory. Don't use a higher uplink gain-power product! Downlink (receive) antenna gain of 5dBi should be satisfactory. With such antenna gain figures, the antenna does not need a rotator for the vertical plane — it can be fixed to point 20 degrees above the horizontal.

Analog (JA-mode) Transponder

Uplink 145.900-146.000 MHz (LSB or CW), Downlink 435.900-435.800 MHz (frequency-inverted to reduce Doppler effect. USB or CW). Don't use FM or AM, or tune up in the satellite passband! On 435.75 MHz there will be a CW PSK beacon (transponder output of 100 mW) alternating between a 15-second CW sequence — H1 plus a series of three-digit numbers representing telemetry data such as solar cell status, at about 20 WPM — and 15 seconds of PSK telemetry at 1200 Baud.

Analog Mode Operation

First a loop-back test — find a free downlink frequency (suppose that 435.870 MHz is free) and compute the corresponding uplink frequency (581.800 MHz downlink) MHz = 145.930 MHz in this example. (Use headphones with the receiver, to avoid transmitting receiver noise, and to avoid

available staff has placed further development of this experiment below the operations waterfall! The preliminary tests showed that the CCD imager and the DSR were working, although there were some unexplained features (possibly due to ground-station display equipment). No further work was carried out on this experiment after September 1985, whilst the team concentrated on other spacecraft systems and software, however most of these tasks are now well under way and some effort can again be spared to explore the CCD experiment.

We plan to recommence CCD and DSR experiments shortly and technically interested experimenters should monitor the 435 MHz UO-11 downlink for test transmissions. Watch the UoSAT Bulletin Service for details.

VHF Beacon Power

A number of experimenters have reported periods of low output power from the UO-11 VHF downlink on 145.825 MHz. The VHF transmitter is designed so that its DC power consumption, and hence its RF power output, is directly related to the primary spacecraft power bus voltage — is the 14 volt battery voltage.

This mechanism automatically protects the spacecraft against excessive power drain at low battery voltages whilst maintaining telemetry experiment data, albeit at reduced output powers.

This mechanism can be observed in operation when the spacecraft is in eclipse. As the battery voltage drops down towards 12 volts from its normal sunlit 14 volts, the VHF transmitter DC current drops from 95 mA to around 62 mA with a corresponding drop in RF output power from around 435 mW to 250 mW. This power change during eclipse operations accounts for the weaker signals received by stations during evening passes in winter and the recent improvement in the Northern Hemisphere as summer approaches.

OSCAR-10 MODE-L BULLETIN EXPERIMENTS

AMSAT ground-stations have been carrying out a series of experiments aimed at providing a reliable bulletin service via OSCAR-10 Mode-L. The experiments involve transmission of FM and Amplitude

To date the Newsletter has been a resounding success within Australia and now comments from overseas amateurs, who have received copies from friends in Australia, indicate that they would like something similar in their own countries.

The Newsletter is basically an eight-page compendium of the nitty-gritties that are relevant in the short-term, items that are out-of-date when printed in this column, and to date it has included some small computer programs specifically for satellite determination, the latest telemetry blocks from OSCAR-10 and OSCAR-9 and 11.

If you are at all interested in satellite communication, this Newsletter is a must.

UOSAT — OSCAR-9

UoSAT-1 CCD Experiment

The CCD imager on UO-9 has been in regular use over the last year on a weekly basis, yielding some quite good images of the Mediterranean. The CCD array used on this spacecraft is an early development device, however, and the image quality is not up to that available from the NOAA/METEOSAT meteorological spacecraft. Therefore, we have not promoted this experiment heavily for other than those who have a technical interest in digital image reception and processing. Experimenters who wish to receive clear images of Earth would find the NOAA/METEOSAT data more rewarding, however the image data from UO-9 provides a technical challenge and good results can be achieved with some advanced techniques.

The considerable upgrade in UO-9 operations as a result of the new DIARY software running on the on-board computer (OBC), which has automated spacecraft functions and rationalised data formats, should now be able to support more regular, reliable and interesting CCD experiments scheduled to commence shortly.

UOSAT-2 OPERATIONS

CCD Experiment

The UO-11 CCD imager and the associated Digital Store and Readout Experiment (DSR) has undergone preliminary tests during 1985, but pressure of work on other spacecraft systems and lack of

audio feedback) Transmit your call sign, and adjust the transmitter VFO to tune in the received signal.

Digital (JD-mode) Transponder

Four up links, 145.850/870/890/910 MHz (use FM transmitter), AX.25 level-2 protocol 1200-Baud NRZI signal transmitted as a Manchester-coded (on-phase) signal, downlink as a PSK-coded NRZI 1200-Baud signal on 435.910 MHz (use an SSB receiver). Bell 202 FSK modems (used in most TNCs are not suitable — use the modem circuit as printed in last month's AMSAT column). The demodulator divides down the (327) clock of the HDLC controller and gates it with the HDLC NRZI output to create the Manchester-coded signal. (Check that the frequency at IC4 pin 2 is 1200 Hz, duty cycle should be 50 percent. Set signal at mic jack to 10 mV p-p). The demodulator was developed by JAT1UR for receiving OSCAR-10 telemetry. (Check that frequency at TP1 is about 3200 Hz. Adjust receiver so centre frequency of the downlink signal is about 1200 Hz, and input to demodulator is about one volt p-p. The centre-zero meter between IC1 pins six and seven acts like the tuning indicator on some FM receivers). Lock range of the PLL is about 200 Hz so use PIT to track Doppler shift (± 8 kHz).

Hopefully, a PCB will be available from AMSAT-Australia for the modem circuit (published last month in the not too distant future. This modem can equally well be connected to other TNCs, ie the VAG3 TNC running AX.25 or the Commodore

64 User Port using the AX.25 software from TUG mentioned in the last issue of the AMSAT Newsletter.

APOLOGY

Most readers will be aware that I unfortunately missed the deadline for the May issue. It was due to the fact that my employer requested me to travel interstate and I simply overlooked the deadline, and the Editor is very understanding. Therefore, for the inconvenience caused I humbly apologise.

This issue is being compiled significantly earlier, as I am making a visit to Japan and I hope to get some more up-to-date information on JAS-1. Therefore, in next month's column we should be able to report more on the launch of JAS-1.

de Colin
as

SATELLITE ACTIVITY FOR PERIOD 1ST TO 10TH MARCH 1988

1. LAUNCHES

The following launching announcements have been received:

1988-0223A	Soyuz T-15	March 13	USSR
1988-0223A	Progress 26	March 19	USSR
1988-0244	Comoros 1736	March 21	USSR
1988-0254	Comoros 1737	March 25	USSR
1988-0264	OSTAR-2	March 28	Note 1
1988-0269	SBTS-2	March 28	Note 2

Notes:

1. GSTAR-2 was launched from Kourou, French Guiana, on an Ariane vehicle for the Spacenet Corporation, United States.

2. SBTS-2 was launched from Kourou, French Guiana, on an Ariane vehicle for the Embratel Group, Brazil.

2. RETURNS

During the period 25 objects decayed including the satellite 1986-004A Cosmos 1724.

NEW OSCAR 10 SCHEDULES

Following is the proposed OSCAR 10 transponder schedule from 20th May to 15th August 1988.

Mode B	050 to 119
Mode L	120 to 136
Mode B	137 to 199
Off	200 to 219
Mode B	220 to 244
Off	245 to 049

NOTE: As the sun angles and eclipse times change, there may be minor changes in the transponder schedules. Listen to the beacons for the latest information.

LATE NEWS

AMSAT-UK has been given permission to broadcast GB2RS/AMSAT UK News Bulletin on OSCAR-10 any day of the week. Previously broadcast could only be broadcast on Sundays.

The above information is from an insert in AMSAT-UK OSCAR NEWS.

Spotlight on SWLing

Robin Harwood VK7RH
5 Helen Street, Launceston, Tas. 7250

Well, here we are in the middle of Winter, and ionospheric conditions are very unpredictable. During May, we had several major solar flares, which caused severe disruption to HF communications. I even had difficulty in working a station only 50 km away on 80 metres, during an evening session.

These storms have brought a lot of pressure on to the 41 and 49 metre broadcasting locations, yet, even there, reliable propagation has not been guaranteed. Some pundits advanced the theory that it had to do with the nuclear accident in Europe. This occurred at the same time, coincidentally, but the experts have so far discounted any correlation between the two events. If there was any noticeable effect, it would have been confined mainly to the Ukraine and Belarusia, and it would have only been for a few hours.

UPDATES

Incidentally, if you wish to stay abreast of daily ionospheric updates, the IPS in Sydney has a recorded information number in Sydney. If you are interested, the number is (02) 28 9864. However, I mainly utilise the weekly IPS summaries that appear on Radio Netherlands Media Network and RAJA Talkback, both presented by Mike Bird also, Standard Frequency and Time Station, WVVH in Fort Collins, Colorado, has an up-to-date propagation forecast at 18 minutes past the hour. This is, however, not always audible here in Australia. Its companion station in Maui, Hawaii — WVVH, does not carry the information, relying mainly on disseminating trans-Pacific weather warnings. I do believe that it used to carry this information at one time, but the distance from Colorado precludes this information being included.

BAWDY LYRICS

As I reported last month, the popular Letterbox program was axed at the end of April. The administrators at the BBC External Services were inundated with protests, but stuck to their guns!

They hinted that a similar format might be

considered next year. There is seemingly a new broom sweeping Bush House. There was considerable controversy over the axing of signature tunes, including Lily Bolor, which preceded the World News on the hour. Although listeners wanted it retained, there was another reason why Lily was taken off. The tune hails from Ulster and its bawdy lyrics have been used by protagonists on one side of the sectarian strife that has engulfed that province for centuries. So the BBC wisely decided that the tune should be quietly dropped. The majority of the World Service listeners were completely unaware, presumably, of Lily's connotations.

NEW PROGRAM

While we are on the BBC World Service, as no doubt you are aware, the 13th Commonwealth Games are being held in Edinburgh, Scotland, during this month. So the BBC will be covering this four-yearly gathering of Commonwealth athletes. In fact, they have launched a new program called *Sportsworld*, which will include commentaries and up-to-date reports from several major sporting events, starting from the World Cup in Mexico.

The 13th Commonwealth Games commence on Thursday, 24th July and conclude on 2nd August. The popular Paddy Feeney hosts reports from Edinburgh at 2100, 0215; 0745; 1330 and 1615 UTC, with some live commentary as well in *Saturday Special* from 1345 UTC.

Other major sporting events are going to be covered in July on *Sportsworld*, as well. Test cricket and Wimbledon tennis are extensively covered. The series between India and England has just concluded, and now it is the turn of the New Zealanders, fresh from their triumph over Australia. You can hear *Sportsworld* live at the First Test Match, at Lords, from the 24th to 29th, from 1115 to 1345. A ball-by-ball commentary for South Asia will be provided on 17770 MHz from 0645 to 1315 UTC and from the Singapore Relay on 9740 MHz from 1305 UTC. The latter channel should be audible here, so I will possibly tune to Radio New Zealand from 0945 on MW.

MAJOR EVENTS

Wimbledon comes to a climax on 5th and 6th July,

with the Women's and Men's Finals and *Sportsworld* will be there from 1305 UTC. As well, there will be coverage of the British Open Golf Tournament on 19th and 20th July at 1515 and 1715 UTC.

Yet another major event that the BBC World Service will be covering is certainly not in the sporting arena. This is the Royal Wedding between HRH Prince Andrew and Miss Sarah Ferguson, on Wednesday, 23rd July, from Westminster Abbey. At deadline time, no details are to hand, but coverage is likely to be from 0800 and 1200 UTC.

RETIMED

Two DX classes have been retimed. Waveguide on the BBC World Service has now been slotted from Wednesdays at 0430 to Mondays at 04 UTC. The other releases at 0750 Sundays and 1115 Tuesdays remain unaltered. The Voice of America's (VOA) *Worldwide Shortwave Spectrum* is now on Tuesdays at 1345 UTC in the *Magazine Show* with host Gene Reich.

Last month, I happened to mention that the ARXC were going to have a Expedition to Rathdown, Victoria. Well, it did not eventuate as it had to be cancelled because of the apathy of DXers. It is sad that they find it difficult getting together, where they can learn from each other. To get away from man-made QRM from power lines, television sets and other appliances, spending an idyllic weekend DXing in an electrically quiet location, is something an avid DXer should dream about. When one is organised, you would think that DXers would jump at the chance, but this sadly is not the case. I hope that those who organise such outings will persevere in spite of the apathy.

One last item, I was reported in the May magazine and also on the Federal Tape segments of the Divisional Broadcasts, that GMT was no more. Such is not the case, for the BBC came to the rescue of the Royal Greenwich Observatory, giving them finance to continue the Casarum clocks. This will allow the famous Greenwich time pips to be heard on the hour.

Well, that is all for this month. Until next time, the very best of listening and 73. Robin VK7RH.



How's DX?

Ken McLachlan VK3AH
Box 39, Mooroolbark, Vic. 3139

The words in a letter I recently received from a regular reader of the column set me thinking. It in part read ... "I am not an intrepid DXer, (I get scared when I am working a pile up and make mistakes ... My answer is — so what!

Our hobby is just that, a hobby, not a business, everyone is human and is liable to make mistakes or errors of judgment — most amateurs are tolerant people and remember they had to make that initial QSO when they received their licence.

I admit that when I received my LAQCP, it took me hours to come to terms with the microphone and eventually call CQ. My first QSO on home brew' six metre equipment, luckily was with Flex VK3VL, who had talked me into waiting for the licence when we were working together in a country town, so many years ago that I wish to forget.

Unfortunately, my second encounter was not so pleasant and a 'perfectionist' gave me a rough time. In time, I probably had more QSOs (some of very long duration) with this amateur than any other. I think I learned a lot from his philosophy.

On gaining my AOCF, I decided that DX from my initial CQ, was my ambition. I have mixed it with many operators from many countries and have found that tolerance and persistence has paid off. I have made many mistakes but I hope that I have learned by them. Only my fellow hobbyists can judge.

Ladies and gentlemen, call CQ DX, get in amongst the 'dog-piles' for that rare DX station and experience will be your best teacher.

Remember, the bands need you — a licenced amateur!

QSL MANAGER

A note from Joanie KA6V, advises that she is now QSL Manager for Ed, ex KB6DAWKH2 and later AH2BE. Ed, whilst on holidays in June, used the call 8P6GI and about the middle of next month he will be residential in Korea for 12 months using an HL9 call, which is still to be allocated.

Joanie is also the Manager for Joe KG6HA, located in the West Carol nes and ON4ABT who works mainly 40 metre DX.

QSLing seems to be a family affair as Joanie's husband, Jerry AA6BB, is doing the chores for Willie T30AC, who is located on West Kirlbati.

This happy duo's QTH is 93767 Dorsey Lane, Junction City, Oregon, 97448 USA.

FOOXX

The operators left Clipperton on the 11th May, after making in excess of 15 000 contacts. The band breakdown was 10m-1520, 15m-3512, 20m-5953, 30m-23, 40m-3853, 80m-1074 and on 180m they had 79 entered in the log book.

Congratulations to the operators on a fine four day effort.

LONG WIRES

A note from Gil VK3CGG, with some information for the column notes that he uses an IC-720A fed into a 'home brew' tuner with a vertical dipole and long wire antennas at his disposal. Of the long wires, one at 75 metres and the other at 450 metres in length, Gil finds the 75 metre piece of wire superior to the other immense length of radiating wire by about 3 to 5 dB.

Unfortunately, Gil must be adjacent to some main power lines as he finds that sometimes on 150 metres the QRN can reach S9+10 dB, which is not conducive to working rare DX.

Gil starts on QRP and gradually builds up power. He has never as yet called CQ DX but has quite a few countries to his credit on the CW mode considering the short time he has been operating, including a number on 10.103 MHz.

My hat is 'tipped' to you for your persistence Gil and get that 450 metre length of radiator 'purring.' It will pay dividends I feel sure.

DON'T THROW THAT CARD AWAY — YET!

Have you worked 4U1VIC? Have you received

their magnificent cards? If you have, hold it in the family safe, as it may still become a new DXCC Country.

Selim OE6EEG, is still trying to gain DXCC status for 4U1VIC and it appears that if it is not granted, the status of 4U1TU, 4U1UN and 1AOKM could be in jeopardy.

The controversy is all centred around the changing of Rule 5(b) of the ARRL DXCC Criteria and my personal opinion is that it should never have been altered or alternatively, when it was altered, 4U1TU, 4U1UN and 1AOKM should have been deleted from the list there and then.

More headaches for Don Search, the programs administrator and associated committees. To all concerned please look at it again and make it fair to all who meet the criteria of 'yesterday and today'.

YASME — THE HISTORY

During 1954, a British subject, Danny Weil, built a yacht and named it Yasme, using a Japanese

word that means 'good luck'.

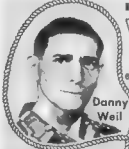
Danny had never sailed a boat before and he was not an amateur operator but he was determined to sail around the world. Despite the many difficulties encountered, he managed to sail the Yasme from England to the British Virgin Islands where he fortunately met up with the late Dick KV4AA.

Dick, in his persuasive manner for which he was renowned and also being renowned for being one of the best DX operators known to our hobby, persuaded Danny to become an amateur before continuing his trip.

Danny hence forth took up another challenge, gained an Amateurs Operating Certificate of Proficiency and within hours was working DX at 20 words per minute. No mean feat.

He installed a rig aboard his home made vessel and continued his trip calling it the Yasme DXpedition.

The Yasme Foundation was formed during 1961 to help Danny meet expenses




Danny Weil

THROUGH THE WORLD IN 100 DAYS

VP2VB/MM

ex-67DW/MM, KZ5WD, FO8AN, YR1B, VK9TW, VR4AA, CR1QAB, VP2VB



YAWL YASME II

**TO RADIO
GLAD TO QSO FROM ...**

*** SIDEBAND AND CW GEAR BY HALICRAFTERS**

HT-32 HT-33 PPM-200 SX-101

YVPAB

This will confirm our radio contact of

JUL 11 1958

MONTH DAY

your time GMT

on 3.5 7 14 21 27 28 MCS

with two way CW AM SSB

Thanks for kind contribution

73 from Dick for Danny

KV4AA

HL9CW

HL9OB

ZK2DN

ZK2EH

ZK2AH

ZK2BT

ZK2BS

ZK2BS

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K Silverman, APO San Francisco, CA 96301, USA.
PO Box 277, APO, San Francisco, CA 96306, USA.
PO Box 1724, D'Arbuit, D'Arbuit.
PO Box 2417, D'Arbuit, D'Arbuit.
PO Box 17786, Honolulu, 96817, USA.
PO Box 119, Funtia Prens, Costa Rica.
PO Box 134, Santiago, Chile.
PO Box 243, Fort Liberty, Haiti.
PO Box 1157, Santo Domingo, Dominican Republic.
PO Box 10, Alibutaki, Cook Islands, South Pacific.
PO Box 181, Niue Island, South Pacific.
Mrs Kay Hannagan, The Terrace, Wellington, Otago, New Zealand.

In closing two quotes from KH6BZF Reports "In propagation ... expect the unexpected and the unexpected as well ..." and "... if you are not the lead dog on a dog sled team ... then your scenery never changes ..." Lee, how do you think them up?

THANKS

Sincere thanks are extended to the following: The Editors of weekly, biweekly and monthly newsletters including the APRIL NEWSLETTER, BARG, CO-OSO, DX FAN, Y FOUNDATION NEWSLETTER, NSIDE DX, JAN and JAY O'BRIEN'S GSL MANAGER - IST KH6BZF REPORTS, LONG ISLAND DX BULLETIN, PAKAPURA RADIO CLUB BULLETIN, ORZ DX, RSOR DX NEWS and THE WESTLAKES AMATEUR RADIO CLUB NEWSLETTER. Magazines including, BREAK IN, QDX, DX POST, JA QO, JARI NEWS, KARE NEWS, QST, RACCOM, VERIGN and WORLD RADIO.

Members who have contributed include VK2 PS, BEX, 314, YL, CGG. Overseas amateurs include KAT7, KAY, W6SZH and ZLs 14M4 and 4M4. Thanks to one and all who have made the column possible this month.

BT

FORBIDDEN TELECOMMUNICATIONS

The following countries have notified the International Telecommunications Union that they forbid telecommunications with amateurs under their jurisdiction:

Angola, Burma, Ethiopia, Ghana, Iraq, Libya, Pakistan; Saudi Arabia; Somali; Thailand; Turkey; Yemen and Zaire.

A side note on Turkey there are Turkish amateurs and they are active. The Turkish Amateur Radio Society has been in correspondence with CRRL.

From CRRL News, 30th March 1986.

THIRD-PARTY

Canada has third-party traffic agreements with the following countries: Antigua and Barbuda, Australia, Bolivia, Chile, Colombia, Costa Rica, Dominica; Dominican Republic; El Salvador; Grenada; Guatemala, Guyana, Haiti, Honduras, Israel; Jamaica; Mexico, Nicaragua, Paraguay, Peru; Trinidad and Tobago, United Kingdom (certain special-event stations only); United States, Uruguay and Venezuela.

From CRRL News, 30th March 1986



Intruder Watch

Bill Martin VK2COP

FEDERAL INTRUDER WATCH CO-ORDINATOR

33 Somerville Road, Hornsby Heights, NSW 2077

It is always nice to be able to say thank you to those who have helped out in the never-ending task of trying to preserve our space on the amateur bands. Those who helped in March 1986, were:

VKs 2BOS, 2PS, 2OL, Mr G H A Bradford, 3AMD, 3LC, 3XB, 3OU, 4AFA, AOC, 4AV, 4BG, 4BHJ, 4BMD, 4BTW, 4KHZ, 5BVF, 5GZ, 6CX, 6JG, 6RO, 6XV, 6XZ, 7YS, 7QD, 7NBF, 7RH, 8HA and 8JF.

STATISTICS

Statistics for the month were:

Broadcast Mode	381
CW Mode	166
RTTY	205
Other Modes	115
Intruders who gave identifying call signs	62

JAMMING

There is still great evidence of jamming stations on 40 metres, which are more of a curse than the intruders they are jamming.

Sadly, there is some mis-guided person also causing deliberate interference on 7.065 MHz to the 40 metre DX Net which is conducted by Eric ZL2AAG. Perhaps the nuisance operator is one of those un-informed people who consider that a net takes up more space on a frequency than a two-way QSO. Anyway, reports have gone to the DOC in VK2 and VK4, and we may be able to get rid of this nuisance.

SPECIAL THANKS

Special thanks go to Roy VK6XV, for extra special help given in March 1986. As a matter of fact, the reports from VK6 generally excellent for that month — keep up the good work!

In the column for January 1986, I mentioned that Peter Boskos, a former SWL has upgraded to VK2KPI — Peter now heads his reports with the call VK2KHE — well done again, Peter!

SHORTED COAX AWARD

It looks as if the Shorted Coax Award (if there was

such a thing) would have to be presented co-jointly to Radio Tirana (Albania) and Radio Beijing (People's Republic of China, and formerly Radio Peking) for their continuing presence on 40 metres, to the detriment of all authorised users of the band, and for stubborn refusal to fit in with responsible users of the radio frequency spectrum. These two share the dubious honour of being the two most persistent and irritating intruders using the broadcast mode.

TAXI CAB

There is still nothing definite on the alleged taxi-type operation on the bottom of 28 MHz in the Asian languages. I suppose everyone will start to scream when the band opens into Cycle 22 and by then, of course, it may well be too late. Have a listen and see if you can hear the activity. But do not forget to let the IW know if you hear it!

REMINDER!

I have asked the DOC if they would remind the USSR authorities of their promise to have the intruder UMS removed from the 15 and 20 metre bands. The USSR promised, in February 1985, to do this. We are still waiting. Letters from Ulrich DJ9KR, of the DARC Bandwacht, and Joeko PA0VDV, the IARU Region 1 Monitoring System Co-ordinator, show that they are hearing a lot of the same intruders in their areas, as we are.

Fortunately for us, however, they are also hearing a lot of intruders that we cannot hear.

Col VK4AKX, points out that 10 years ago, there were many intruders on the 80 metre band which are no longer present. Many of these are still present on other bands, originating from the same countries. The significant addition in 1986, is the presence of jamming stations, which are often up to eight kilohertz wide. This does not make for easy listening.

Well, that is all for this month — please keep the intruder Watch in mind while you are on the air, and I wish you 73 and good DX.

BT

WANT TO KNOW MORE?

Contact your Divisional Intruder Watch Co-ordinator to find out how you too can become an Intruder Watcher!

Ian J. Truscott's ELECTRONIC WORLD

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AR86



Education Notes

AACP THEORY EXAMINATION TEST PAPER

Brenda Edmonds VK3KT
FEDERAL EDUCATION OFFICER

56 Baden Powell Drive, Frankston, Vic 3199

Following is a Sample AACP Theory Examination Paper. Select the correct or most appropriate alternative answer.

1. Mutual Inductance:

- a. occurs only with helically wound coils.
- b. occurs when a constant current is flowing.
- c. requires two coils in the same magnetic field.
- d. can only occur with sine wave AC.

2. All microphones operate by:

- a. using a diaphragm to move a coil
- b. changing audio frequencies to radio frequencies.
- c. causing sound waves to vary the voltage across a crystal.
- d. converting sound wave energy to changes in electrical energy.

3. The terminal voltage of a car battery increases above 12 volts when the alternator is charging. The power output of a solid state FM transmitter drawing its primary power from this battery will:

- a. increase when the voltage increases
- b. not change.
- c. decrease with increased engine speed.
- d. depend on the degree of voltage regulation in the transmitter low level stages.

4. Frequency dependent interference to radio reception may be reduced by:

- a. RF bypassing speaker leads.
- b. RF bypassing the AC input power supply lead.
- c. using a stub filter
- d. radiation into the power mains.

5. Variations in HF propagation during a 27 day cycle are probably due to this:

- a. phase of the moon
- b. solar sunspot cycle.
- c. rotation of the sun
- d. inclination of the earth.

6. A practical direct conversion receiver would usually:

- a. include a low pass filter after the mixer.
- b. have two IF stages.
- c. function without a local oscillator
- d. have AGC on the IF stage only.

7. A FET is preferred to a bipolar transistor when used as an HF or VHF RF amplifier because:

- a. it has a lower Q and is more selective
- b. it is less subject to overloading from strong signals
- c. the tuning circuits are easier to adjust
- d. less capacitance and inductance is required to cover all bands.

8. Intermodulation interference is generally caused when:

- a. a transmitter radiates spurious frequencies.
- b. non-linear stages generate unwanted frequency products.
- c. stray capacitances and inductances act as tuned circuits
- d. harmonics of the oscillator stage fall outside the amateur bands.

9. Slow Scan television (SSTV) is:

- a. not used at HF
- b. best suited to subjects in rapid motion.
- c. only useful for short range because of phase distortion
- d. not suitable for reception on a domestic television receiver.

10. The purpose of 'doping' semi-conductor material is to:

- a. increase the heat tolerance.
- b. allow growth of large crystals.
- c. cancel out natural impurities
- d. provide current carriers.

11. If a receiver frequency readout is displayed in discrete steps it is termed:

- a. stepped
- b. digital
- c. incremental
- d. proportional

12. In AC wave-form, the RMS value is:

- a. twice the peak voltage.
- b. 707 of the peak voltage.
- c. half the peak voltage.
- d. equal to the peak voltage.

13. Secondary emission from the anode of a vacuum tube is prevented by:

- a. the suppressor grid.
- b. the screen grid.
- c. internal coupling of the screen grid to the control grid.
- d. operating the tube as a Class C amplifier.

14. In a resonance modulator, FM may be achieved by applying the audio signal in a manner to vary:

- a. L only.
- b. C only.
- c. either L or C.
- d. L and C simultaneously in opposite polarities.

15. The voltage and current distribution along an antenna is in part determined by the fact that:

- a. there can be no current flow at the ends.
- b. the centre is always a current maximum.
- c. the voltage at the ends must be zero.
- d. current and voltage are always in phase.

16. In multi-hop HF transmission:

- a. the signal may change frequency due to the earth's rotation.
- b. signal polarisation may change.
- c. attenuation occurs at each refraction but not at the reflections.
- d. frequencies above the MUF should be used.

17. A cathode ray oscilloscope pattern is controlled by:

- a. the temperature of the cathode.
- b. the setting of the trigger control.
- c. voltages applied to the deflection plates
- d. the bias setting of the sweep generator.

18. For personal safety reasons it is important to realise that large value electrolytic capacitors used in a circuit without a 'bleeder' may:

- a. remain charged forever
- b. not be charged again.
- c. become reverse polarised.
- d. remain charged for several days.

19. A 100 watt output transmitter contains a harmonic at a level of 60 dB below the carrier. The power of this harmonic component is:

- a. 0.1 watt
- b. 10 milli-watts.
- c. 10 milli-watts.
- d. 10 micro-watts.

20. This circuit represents a:



- a. Pierce crystal oscillator.
- b. Colpitts crystal oscillator.
- c. crystal oscillator with frequency multiplier.
- d. VFO.

21. An artificial antenna should:

- a. have twice the input impedance of the normal antenna.
- b. be inside the transmitter case to prevent unwanted radiation.
- c. have the same input impedance as the transmitter output impedance.
- d. use inductive resonances.

22. Ground wave propagation at HF is:

- a. unaffected by soil conditions.
- b. greatest at 29 MHz.
- c. least with vertical polarisation.
- d. frequency dependent.

23. Severe interference to television reception on all channels is probably due to:

- a. amateur station harmonics
- b. direct overload from a nearby amateur station
- c. power line leakage.
- d. the lack of a low pass filter at the receiver input

24. Leakage current in semi-conductor devices is possible because of:

- a. thermally generated current carriers.
- b. sensitivity to light
- c. naturally occurring impurities in the material.
- d. the density of the atoms.

25. A capacitor which is an integral part of an IC chip:

- a. is a passive component.
- b. is an active component
- c. will have a very high working voltage.
- d. usually has an air dielectric.

26. An advantage of using a Five-Eighth wave length vertical antenna is that:

- a. it is physically shorter than a half wavelength.
- b. the length provides a 50 ohm base impedance.
- c. the angle of radiation is low.
- d. it is effective as a multi-band radiator

27. In a balanced transmission line:

- a. the SWR will always be less than 2.5:1
- b. both wires are at equal potential to earth
- c. the velocity factor is about 0.95
- d. the impedance depends on the voltage applied

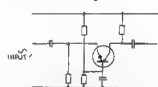
28. A slow change in an oscillator frequency after switching on may be due to:

- a. a capacitor charging effect.
- b. a change in the Q of the tuned circuits
- c. a sensitivity to temperature changes.
- d. rapid HT voltage changes.

29. The effective advantage gain of a Single Sideband Suppressed Carrier over Amplitude Modulated emission (of the same power output) is approximately:

- a. 2 dB.
- b. 3 dB.
- c. 6 dB.
- d. 9-12 dB

30. This transistor configuration:



- a. could be used as a frequency multiplier for VHF
- b. has a high current gain.
- c. is a common emitter
- d. has a 180 degrees phase shift.

31. The frequency of a Quartz crystal:

- a. is permanently fixed at the time of cutting
- b. can be varied slightly in an oscillator circuit by using a trimmer capacitor
- c. can be varied by about 20 percent of its marked frequency.
- d. increases when mounted.

32. If VAC=12 volts RMS, the PIV rating of the diode should be at least:

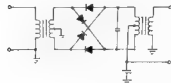


- a. 50 volts.
b. 30 volts.
c. 20 volts.
d. 12 volts.

33. Spurious emissions at VHF emanating from an HF transmitter may be prevented by using:

- a. a high pass filter at the transmitter output.
b. a resonant antenna.
c. a linear final amplifier.
d. ferrite beads in all active leads in the final stage.

34. This circuit represents:



- a. A balanced modulator.
b. a bridge rectifier power supply.
c. an RF attenuator.
d. an FM discriminator.

35. An amplifier operating in class A:

- a. is biased to cut off.
b. has a power efficiency of about 70 percent.
c. is linear.
d. can only be used for audio frequencies.

36. The loading effect of a moving coil meter is:

- a. only significant when it is used as an ammeter.
b. rated in volts per ohm.
c. dependent on the internal resistance of the meter.
d. greater at AC voltages than DC voltages.

37. Ionisation of the upper atmosphere layers is caused by:

- a. the magnetic field of the earth.
b. the ozone layer.
c. solar radiation.
d. night to day time temperature variations.

38. A two-metre FM signal achieves full receiver quieting, but produces low audio output. It is likely that the transmitter has low:

- a. audio gain after the phase modulator.
b. RF output.
c. discriminator output.
d. deviation.

39. The Q of a series resonant circuit:

- a. is an indication of its mechanical stability.
b. increases as the applied voltage increases.
c. is solar radiation from the frequency and inductance values.
d. can be calculated from reactance and series resistance.

40. A metal water pipe when used as a common earth return may become 'live' if it:

- a. has a high resistance path to earth.
b. is near the mains earth.
c. is a large diameter copper pipe.
d. is buried deep in wet soil.

41. External cross-modulation may occur when:

- a. a low pass filter is fitted to the receiver.
b. a corroded metal joint acts as a rectifier of RF energy.
c. two signals separated by only a few kHz, are received together.
d. omni-directional microphones are used.

42. Band pass crystal filters:

- a. cannot be used at frequencies above 500 kHz.
b. generally lack Q.
c. have a low impedance at the design frequency.
d. are used in series to reduce overall resistance.

43. If the frequency applied to a capacitor is doubled, the reactance is:

- a. unchanged.
b. halved.
c. doubled.
d. squared.

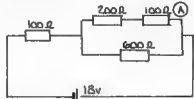
44. Noise limiters are generally most effective against:

- a. continuous single frequency carriers.
b. short duration pulses.
c. noise generated in RF stages.
d. over-modulation and cross-modulation.

45. One Farad is equal to:

- a. 10^9 nanofarads.
b. 10^6 picofarads.
c. 10^3 microfarads.
d. 10^{-3} megafarads.

46. In this circuit, the current flowing at point A will be:



- a. 0.018 amp.
b. the same as at B.
c. the same as at C.
d. 40 millamps.

47. Many modern amateur stations incorporate a digital frequency meter which:

- a. works by heterodyning with a highly accurate VFO.
b. may achieve an accuracy of better than 0.001 Hz.
c. can only be used above 20 MHz.
d. is only as accurate as the crystal reference oscillator.

48. A key click filter used in a CW transmitter:

- a. is only necessary when the key is in an active RF mode.
b. slopes the radiation of unwanted harmonics.
c. shapes the leading and trailing edges of each pulse.
d. is used to give a clean sharp make and break.

49. A frequency transverter:

- a. allows an HF transceiver to be used on VHF.
b. translates an analogue output to a digital readout.
c. can only process AM signals.
d. allows FM to be received on an AM receiver.

50. A detector which is suitable for CW, AM and SSB is:

- a. simple diode detector.
b. discriminator.
c. ratio detector.
d. product detector.

P 05	Q 09	R 06	S 02	T 01
U 08	V 04	W 03	X 07	Y 05
Z 01	AA 02	AB 01	AC 03	AD 04
AE 05	AF 06	AG 07	AH 08	AI 09
AJ 10	AK 11	AL 12	AM 13	AN 14
AO 15	AP 16	AQ 17	AR 18	AS 19
AT 20	AU 21	AV 22	AW 23	AX 24
AY 25	AZ 26	BA 27	BB 28	BC 29
BD 30	BE 31	BF 32	BG 33	BH 34

EXAMINATION PAPER
ANSWERS TO ACP SAMPLE

PCB MAKING MADE EASIER?

A company in New York, USA, has invented, and is now marketing Image Film that will simplify making PCBs.

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From QRM, March/April 1986



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AN60



WICEN News

Ron Henderson VK1RH
171 Kingsford Smith Drive, Melba, ACT 2615

HF EMERGENCY PROCEDURE

At the IARU Region 3 Conference, held in Auckland during November 1985, the following motion, put forward by IARU Region 1, was adopted unanimously:

"The IARU Region 1 Division HF Working Group Recognising that a common emergency procedure for all Regions on HF is desirable Proposes — that the IARU Region 3 Association adopts in principle the Region 1 HF Emergency Procedure as adopted by the IARU Region 1 Conference in Cebu (see annex)

The Conference inserted in principle into the proposal for Regional Societies recognised that actual procedures were often dictated by the SES/ Civil Defence organisation the amateur society was affiliated with. Indeed we in WICEN generally follow the procedure in the SES (formerly Civil Defence) little grey book and NZART AREC would support the proposal only as far as paragraph 4. Nevertheless, for those Member Societies of Region 3 who have no experience the HF Emergency Procedure provides useful guidelines to emergency operations.

The Procedure is reproduced in full below for the information of Australian amateurs taking note of the reservations identified above

HF INTERNATIONAL EMERGENCY OPERATING PROCEDURE

1 General: Amateur radio is one of the Radio communication services set up by the International Telecommunication Union. In all these services emergency traffic has absolute priority over their normal operation.

Emergency operation requires an efficient forwarding of traffic. Efficiency of communication is not self-evident in amateur radio so each operator has to think about how he should react in case of emergency and should obtain as much preparedness as possible

2. Measures in case of emergency —

— If you hear the word "emergency", "welfare-traffic" or the abbreviation QUF — stop transmitting and listen

— If you receive such traffic — stand by, observe it and write down all you hear

— do not leave the frequency before you are sure that you cannot help and somebody is helping

— do not transmit before you are sure that you can help

— follow the instructions that traffic controlling station (if there is one) is giving you. The traffic is controlled by the station in emergency or the station appointed by the station in emergency.

— keep messages short — do not transmit useless information

— in case of interference by other stations, the traffic controlling station or other stations appointed by it should transmit the word "emergency", "welfare-traffic" — "stop sending" or the abbreviation QUF to the interfering station

— gather information by following system

When? (date, time, frequency)

Where? (emergency place)

What? (what happened? what is to be done?)

How? (how can be helped?)

Who? (who is able to help?)

3. Confine to communication — Amateur radio is perhaps the last communication possibility in case of emergency. Confine to it. Leave advice and planning of aid to persons and institutions in charge of emergency relief

4. Message form — Establish contact with persons and organisations involved in the emergency or the relief actions and help them by relaying their traffic. Communication is most efficient if a message reaches its destination written down exactly as it left the originator. So any originator should write down his message

(telegram style) with a sufficient address and normally a sufficient signature

Example

doctor brown river city (address)
refer to your message November 16

1230UTC stop how many units of xyz you need (text)

smith red cross sealown (signature)

5. i Preamble

The station which puts the message into the amateur radio network composes the preamble. The preamble contains the following information in the following order

number
precedence
station or origin
check (number of words in text)
place of origin
filing time
filing date

The number is a serial number assigned to the message

The precedence may be: emergency — p priority
— r routine

The station of origin is the call of the station which first sent the message over the air

The place of origin is the place (city, town, village, ship) from where the originator sends his message

The filing time and filing date is the time when the message was originated in UTC

Example
nr 32 p XY1ZZ 26 pool-town 2215 jan 14 = red cross lake city

please send us information about following persons stop water smith harbour street 4

stop adam brown and family water avenue 16 stop ada black rain-way 28 =

information bureau for river district disaster +

i Quick preamble

For traffic in VHF-FM nets where communication is easier you may use a shorter type of preamble

number
station of origin
filing time

The number is a serial number assigned to the message

The station of origin is the call of the station which first sent the message over the air

The filing time is the time when the message is originated

Example
N4 4 XY1ZZ 1832 =

hospital lake city

two more ambulances needed at harbour street +

6. Operation example — phone

— YX1AA this is XY1ZZ, I have a message, over

— this is YX1AA, I am ready, over

— message begins,

number four x-ray yankee one zulu zulu one eight

three two, address

hospital lake city

text,

two more ambulances needed at harbour street,

message ends, over

— repeat word after more, over

— more ambulances over

— received number four YX1AA out

ok XY1AA out

7. Operation example — CW

— YX1AA de XY1ZZ qtc k

— de YX1AA qrv k

— Nr 32 p XY1AA 24 pool town 2215 Jan 14

— red cross lake city —

— please send us information —

— information bureau for river district disaster

—

— wa please k

— please send k

— de YX1AA qsl 32 sk

— de XY1ZZ ok sk

message begins —

separation sign —

message ends —

8. Phonetic alphabet

— to avoid confusion use only the following phonetic alphabet

alpha	november
bravo	oscar
charlie	papa
delta	quebec
echo	romeo
foxtrot	siera
golf	tango
hotel	uniform
india	victor
juliet	whiskey
kilo	x-ray
lima	yankee
mike	zulu

9. Special CWRTTY abbreviations for emergency traffic

QOD? Can you communicate with me in — QOD I can communicate with you in

0 Dutch 5 Italian

1 English 6 Japanese

2 French 7 Norwegian

3 German 8 Russian

4 Greek 9 Spanish

QTV? Shall I stand guard for you on the frequency . . . kHz (from . . . to . . . hours) — stand guard for me on the frequency . . . kHz (from . . . to . . .)

QTX? Will you keep your station open for further communication with me until further notice (or until . . .) — I will keep my station open for further communication with you until further notice (or until . . .)

QUAT? Have you news of . . . — here is news of . . .

QUF? Have you received the distress (emergency) signal sent by . . . — I have received the distress (emergency) signal sent by . . .

QUM? May I resume normal working — normal working may be resumed

QRR? Are you ready for automatic operation — I am ready for automatic operation

10. What to do afterwards.

— do not forget to inform your national society about your emergency — or welfare traffic handling

— why not publicise our good work?

IS THIS THE YOUNGEST?

A five-year-old kindergarten student, who took a crash course in amateur radio at the urging of her amateur parents, became the Japan's youngest licensed amateur radio operator

Itsuka Matsuoka, daughter of 43-year-old Mikio and Yasuko, 42 and residents of Abahin, in north-eastern Hokkaido, ca-mad the exam nation was not difficult. Itsuka's 11-year-old brother, Masafumi, is also an amateur

For the examination it was necessary for her to learn the complicated kanji (Chinese characters). Average Japanese students begin learning kanji in primary school

Itsuka became interested in radio last August and began a 36-hour course offered over 12 days by the Japan Amateur Radio Association. Association on 17th March and took the final examination on 9th April

The exam nation is divided into two parts: radio engineering and radio wave control law, with 10 questions and maximum marks of 100 for each part

Contributed by David Thompson VK2BOT and abridged from THE STRAITS TIMES, 26th April 1988

WICEN and OFF ROAD RACING

Brian Monnia VK4XS

11 Jethro Street, Aspley, Qld. 4034

"All passage control points, this is WICEN base, the race started on time at 0700" ... and another major exercise involving WICEN groups from Brisbane, Ipswich, Dalby, and the Gold Coast, was underway on Sunday, 13th April 1986.

The occasion was the first round of the 1986 Goodyear Wrangler Off Road Championship in the Koorabyn Valley, about 70 km south of Brisbane. For the third year, WICEN had been requested to provide a safety net and a score-reporting system to assist in the efficient running of the event, WICEN's participation over the last three years follows the previous, and continuing, successful involvement with other rallies conducted by the Brisbane Sporting Car Club (BSCC). (See *Rallying and WICEN*, AR July 1984). The 1986 Rally came at a difficult time for WICEN, as it conflicted with the 1986 Club's Conference, and also another WICEN exercise of a more sedate nature, one involving horses. However, sufficient operators were found for both exercises without any difficulty.

set up and operated by Angus Garland VK4AGQ, ably assisted by Fred Saunders VK4AFJ, and a team of operators. Setting up a base station for all these frequencies is a rather lengthy job, and Angus, together with some of his assistants used Saturday afternoon to install the equipment and to erect and connect the various antennas.

At the 1984 Rally, the first year WICEN provided communications, the Queensland State Coordinator of WICEN, Ken Ayres VK4KD, brought his WICEN mobile base station from the Gold Coast, which was then used as a base station for most of the frequencies. Angus VK4AGQ, provided a two metre and a 70 cm channel from his car. With the WICEN mobile base no longer available, location of the Base Station in 1985 was not particularly good, but by 1986, the organisers had realised our problems and requirements, and were able to meet most of them.

Most of the time, 80 metres was a dead-loss because of electrical interference on receive, and on transmit the signal interfered with the PA

system. Angus' car was used as the base mount for several of the VHF/UHF antennas.

The WICEN operation each year has been under the overall control of Geoff Adcock VK4AG, but with his interest in cars, Geoff wanted to be out with the action, and for the first two years elected to man a control point. These points were located in suitable positions around the track, and were manned by several time-keepers and at least one WICEN operator.

With the early start, most operators elected to arrive on Saturday afternoon, set up their equipment and antennas, then camp over night ready for the next morning.



Geoff VK4AG, (in hat), and Paul VK4ZEM, assemble one of the 70 cm repeater aerials.

The biggest problem at the control points was not the amount of traffic, although it was heavy in the first round, but the dust. The amount of dust created by 150 cars over six circuits of the track, even allowing for the number that dropped out, has to be seen to be believed. If the wind blew constantly from the one direction, it was possible in some cases to locate the control point up wind of the track, but with the variable winds the dust just had to be endured.

In planning the 1986 event, the organisers made a tentative decision to establish a sub-base at Boonah, to the west of the main rally circuit. They advised that they expected a lot of radio traffic from there back to the main base, and requested that a radio link be allowed for in WICEN planning. This was a problem as Boonah would be inaccessible on VHF/UHF, and 80 metres was undesirable as mentioned earlier.

Once more, it was a case of Geoff to the rescue. He had obtained a surplus commercial repeater some time previously, and with the addition of control and identification boards plus the appropriate crystals, soon had VK4RWI operating on 70 cm, as a portable WICEN repeater. Geoff's job in the 1986 rally was to set up and monitor the operation of this repeater on a prominent hill which was in line-of-sight from Boonah, and line-of-sight from the main WICEN base.

Another of Geoff's self imposed tasks, to the great gratitude of the BSCC was to service and make operable the commercial VHF high band radios owned and operated by them. As the Club previously had communication problems in the various areas of the circuit, Geoff also volunteered



Terry VK4ATH, operating at a check point.

Photograph courtesy VK4AG

The Rally is run over six circuits of a track in the hills between Koorabyn and Boonah to a total race distance of 400 km, with an average of 150 competitors in several different classes of off-road vehicles. WICEN was required to man a base station plus nine control points, with each control point reporting back to base the time through the point for each car.

A little arithmetic shows that 150 x 9 x 6 equals 8100 transit times had to be handled by the network. In addition, incident reports, drivers requests for assistance and rally operational traffic all added to the load. While the worst case had to be planned for, in actual fact the attrition rate in the event saw a very significant number of cars drop out with a consequent drop in traffic over the duration of the race.

To handle this traffic, four different frequencies were used in the first two years, 10m, 6m, 2m, and 70cm. This year, the same bands were used, but with two frequencies on both two metres and 70 cm. As well, 80 metres was available as a standby.

The base station in 1986 was located in the same tent as the Rally Operations Base, and was

Some of the base crew hold-up the antenna farm. From left: Angus VK4AGQ, Fred VK4AFJ, and Cecily VK4QW.

Photograph courtesy VK4RWI





The 70 cm antenna being erected by Paul VK4ZEM, assisted by Greg Mennis and his friend Mark McGrath. Geoff VK4AG, (partially obscured) works on the feeder.

to provide a relay service from his hill for them. Because of various problems, the BSCC were unable to finalise their proposals to use Boonah and, as it turned out, this was lucky for WICEN. On Saturday afternoon Murphy struck, and VK4RWL, which had been operating perfectly, developed a fault. This was fixed, but the repeater again became faulty on the Sunday morning. With the equipment available on-site, the fault could not be located, and the repeater had to be closed-down. (It was eventually diagnosed as an errant blob of solder, which was making an intermittent short on one of the circuit boards.) Only one check point was in a difficult location, and really needed the repeater, but by means of a quick bit of flogger work on two transceivers by Paul Mead VK4ZEM, who was assisting Geoff at the repeater site, all traffic was passed without any delay.



Paul VK4ZEM, working on two transceivers. Photograph courtesy VK4AG

Geoff was kept very busy on his hill, and the comment was made that he seemed to be operating on one frequency or the other all day until the net closed at 1730.

No figures were available for the total number of messages handled by the net during the day, but the author's control point originated 65, both scores and incident reports. Taking that as an average, and multiplying by nine gives over 500 messages through the base station. This is a not inconsiderable number to handle in about nine hours.

None of these messages reported any serious injuries, although there have been two accidents with injuries requiring helicopter evacuation during the three events. However, WICEN operators were not at the scene and had no part in their reports.



They even run their rally cars on three wheels!



David VK4AFA, at his mobile shack. Photograph courtesy VK4AFA

The value of the scores messages lies in two directions. Firstly, in keeping a running location of each vehicle for safety purposes, and secondly, in having times at each control point reported

quickly for scoring purposes. Normally WICEN results are accepted as transmitted, having been proved so reliable in the past. However, this was proved and also the usefulness of the information clearly shown, during the hearing of a protest that followed the 1985 event. Using a large scale map of the track, model cars, and the recorded and transmitted times, officials of the BSCC were able to show the relative location of the cars involved in the protest over the whole circuit, and were easily successful in having the protest dismissed.

And so, once more WICEN participated in a very successful exercise showing its value in message handling under portable conditions. The only incident to mar an otherwise successful day was an accident involving Graham Reuter VK4VEA, on the return journey to Brisbane, resulting in many dollars damage to his car. Even

then, WICEN operators were quickly on the scene to render what assistance was needed.

The various WICEN groups involved in providing communications at this rally look forward to other similar exercises in the future.



QSP

FAMOUS PEOPLE

In the QSP page 63 December *Amateur Radio*, the question was asked if any readers could add to the list of well-known amateurs.

VK6OU draws attention to the fact that the President of the Italian Republic, Francesco Cossiga is licensed amateur 10FCG

VACUUM TUBE IC

Designers at Los Alamos National Laboratory have manufactured a Vacuum Tube IC, containing about 200 triodes and measuring about 40 mils on a side.

Such gadgets will be the *in* thing within a few years, providing that nothing unforeseen happens in the political arena. The reason behind the research to make a vacuum tube IC is to find something with small dimensions, tube characteristics such as high temperature operation, radiation resistant and having a substantial forgiveness of voltage surges. The only thing not clear as yet is whether or not the small geometries associated with the micro-tubes translate to a correspondingly improved high-frequency performance.

From *QRM*, March/April 1986



Pounding Brass

Marshall Emm VK5FN
Box 389, Adelaide, SA. 5001

It is a cold, rainy and generally miserable afternoon here in Adelaide as I write this, toward the end of April. The phrase *April showers bring May flowers* springs to mind, but somehow I don't think it will work. Anyhow, it is not the sort of day for doing anything particularly strenuous, so I thought I would take the opportunity to catch up on some odds and ends, like this column. And within this column, the subject for the month will be you guessed it — odds and ends.

For starters, the gremlins got into the April edition of *Pounding Brass*. I quoted the price of the Automorse mechanical keyer as being 50 pounds (the £ should have been five pounds (about \$10 decimal)).

The price of five pounds was quoted to me as being about a week's wages at the time (around the 1920s), so this would possibly be about \$400 in today's money.

The question of the last Morse telegraphy transmission in Australia prompted a response from Gordon Brown VK1AD, who says:

"Speaking of the last Morse message in Australia — and I presume we are talking about the old sounder system as used by the PMG — I can go nearly 10 years better. Well 11 years actually, than the Lord Howe link. If memory served me correctly, the Lord Howe link was from Brisbane Chief Telegraph Office (CTO) and was always manually operated (not machine Morse) as the volume of traffic did not warrant any such new fangled ideas.

However, I digress... there was a working Morse line in use between Melbourne CTO, Canberra CTO, and Sydney CTO. Now we are getting into semantics here when we talk about the working of the Melbourne/Canberra/Sydney link was what we call an 'order wire' — a line which is used for passing instructions when testing lines, and would carry such instructions as 'key line 124', or 'let me see an earth on that', or 'don't see your loop on it mate'. ... things like that. It was only taken out of service about two years ago, mainly because the engineers had forgotten how to work it. The Melbourne/Canberra link was useful. As it was not used for passing public traffic it might not qualify for the 'last Morse line in Australia' stakes."

Gordon also reminded me of the poems by telegraphist, Frank "Spru" Spruhan, including *Coming Round the Bend*, which was really the kick-off and inspiration for this column when I submitted it to *Amateur Radio* in June or July 1983. It is worth reprinting.

In January, I received a letter from Syd Clark VK3ASC, parts of which may be of interest as they provide some interesting historical material and refer to books which would be recommended reading for anyone interested in the history of wireless telegraphy.

First on Syd's list is the *Admiralty Handbook of Wireless Telegraphy 1925*, which covers spark, arc, and alternator systems, and an early valve transmitting system. From Syd's letter:

"Before the discovery of 'short waves' there was much competition between various countries and individuals and patents were jealously guarded. Marconi won out with his spark system primarily because of the frequency range that could be covered with transmitters varying from a few watts to many kilowatts, but not before he began using quenched spark gaps and coupled circuits between the spark gap excited 'oscillator' and the aerial circuit. The original Marconi transmitter had the spark gap in series with the aerial but this was far too heavily coupled for anything but a broad band jammer. It also wasted much power.

"The arc had advantages — because of the more nearly 'T9' note but keying was a problem and that required either a frequency shift (Figure 206) with a spacing wave on 2027m (148 kHz) and marking wave on 2030m (150 kHz), or the other common method which was to shift the arc onto a dummy load circuit called a back shunt circuit. Arcs had the problem of preventing ships from 'listening thru'.

"Para 389 gives three methods of generating signals, (a) Poulsen arc, (b) transmitting valve, (c) HF alternator. The arc is quoted as giving greater ranges power for power and sharper tuning compared to spark. It was considered to have a very serious drawback so far as ships were concerned because the arc had to be switched off completely to listen and it was slow to start up. The book says 'arcs up to 1500 kW are in operation'.

"HF alternator systems are mentioned only briefly because they are limited in frequency, even 160 kHz being high for them.

A second book, *Wireless Telegraphy by Zennisch* (translated Selig, McGraw Hill 1915) appears to rather nicely fill the gaps and approaches things from a rather more academic point of view.

"The Summer 1985 issue of the *Royal Naval Amateur Radio Society newsletter* devotes pages 16-20 to a review of a newly published book by G A G Brooke titled *Jackson, the Father of Maritime Radio*. It deals mainly with the early history from 1898 to 1901, and makes available information from files opened by the British Freedom of Information legislation."

Thanks again Syd for an interesting and informative letter, and I would like to take this opportunity to thank all my correspondents, who make writing *Pounding Brass* a pleasure.

Now, to lighten your day, some classic telegrams from the book *Coming Round the Bend*, and *Other Verse*.

From a lady to her daughter on the birth of the latter's first child — *Baby not marvelous / I have 28 teeth and can jump backwards / I present following — Gran.*

From the pugilist in Kalgoolie to his dad in Sydney — *Won easy / in 76 rounds.*

From a Frank, aboard ship between Melbourne and Brisbane — *Dreadful voyage / Ship crowded / Gave birth to two girls.*

And from a worried migrant — *What the reason is why no you write!*

The essence of speed and efficiency in CW working — the ability to abbreviate words, a technique referred to by generations of manual telegraphists as *cutting down*. Of course, an abbreviation is only useful so long as both parties understand it as this poem clearly illustrates.

COMING ROUND THE BEND

I well remember Charlie Teede,
Who used to work the races,
No need, indeed, to ask for speed,
He'd pace it with the pacer,
Lord help the man who 'broker' him once
Or questioned his 'creations';
On him a flood of scorn was turned
The atmosphere with brimstone burned,
And Pitman, green with envy squirmed
At his abbreviations
TE FIELD GOT WL AWA TO TI
& AS TY SETTL DWN
TE SHICER IST T BK TE LI
WS FLWD BJ LO BROWN
IN CLOSE PROXIM WS TIRED TIM,
TN CME ARBTRATN,
BHND TE BUNCH WS CNTR LUNCH,
GD LUCK & HIT TAXZTN
TY WHIZZED ALNG (AND SO DID CHARLES)
WTOUT TE LEAST CESSATN.

CRT B TE TOPWT JUMPED
& GOT TRMS WS SHICR,
WO TN & TRE HS BUNDI DUMPD
WH LABLD HM A TWICER
I scrambled after Charlie
Like a traler round a bend,
Then gave OK, but queried,
CRT B U SEND
NOW WHAT IS THAT IN AID OF?
ENLARGE A BIT MY FRIEND.

The sounder nearly hit the roof
As Charlie scorched the line.

U ORT T B ON TE RABT PROOF
OR UP AT DOODLEKINE
CHASIN PODDIES RND TE YD
SHD 8 UR CHF PASTIME
T TNK U DONT WRK IT OUT
IT NRLY MAKES ME SK
ANI OLE GIN OR ROUSAST
CD WRITE IT WA A STICK
FACI A MAN WO CALLS HMSF
A TGST ASKG TT
A RECORD O S VACUUM
IS LOCATED NEATH UR HAT.
D U WANT IT IN OILS BL LAMBERT?
OR CARVD ON A MARBLE STONE?
OLE WINJA MORTILL CD TKE IT
& UD NVR HR A MOAN,
NOT SPUT OUT LI LIVE DUN FR U
BT CWR DWN T TE BONE

WL I MST SA ITS TE BST DISPLA
OF IGNRCE IVE HEARD,
O ALL TE SCOUTS IN WA
UR CRTNLI TE BIRD
& ANI HRSH REMKS IVE MIST
TY ALL CN 8 INFERO
CRT B, ITS KNOWN BI ROTW
WT WD U HA ME SND?
ITS CMG RND TE BEND, U GOAT
COMING ROUND THE BEND!
73 until next month.

MORSE CODE MAN

Mr Jack Sykes, aged 84, is believed to be the only remaining British manufacturer of Morse keys. Jack works in the kitchen of his home at Startwals, near Huddersfield, west Yorkshire.

He began his career as a radio operator in 1918, and now supplies keys to amateurs all over the world.

Jack is now moving into new technology and proposes to convert his ear port into a room where he can experiment with computers. Contributed by Tom Laidler VK5TL, from The London Times





Australian Ladies Amateur Radio Association

Joy Collis VK2EBX
PUBLICITY OFFICER, ALARA
Box 22, Yeoval, NSW 2568

MEMBERSHIP LIST as at 31st March 1986

Cherlene VK1NE1	21 February 1982	Jean Shaw	12 December 1983
Kathleen VK2ACP	1 October 1980	Chris VK4ABN	14 July 1979
Betty VK2AMU	9 March 1981	Sandra VK4ACJ	22 July 1980
Jan VK2AMU	8 March 1981	Marlene VK4ADE	10 October 1980
Dorothy VK2DOB	17 March 1983	Jan VK4ASK	6 October 1984
Norma VK2DDB	20 August 1975	Connie VK4ATX	1 September 1982
Ewyn VK2DUL	22 July 1980	Dulcie VK4BDH	6 January 1981
Margie VK2DVL	11 August 1979	Eleanor VK4BEM	5 May 1985
Joy VK2FBX	25 January 1980	Betty VK4BET	24 September 1985
Heather VK2KHD	22 October 1978	Wendy VK4BSQ	2 March 1982
Marlene VK2KFK	11 November 1983	Aime VK4FAB	12 June 1981
Joy VK2M1	5 November 1978	Lori VK4FFO	27 June 1984
Margaret VK2MV	20 March 1982	Phyl VK4JFA	12 January 1981
Marce VK2NKN	8 August 1981	Dorothy VK4NAM	21 May 1978
Nancy VK2NPJ	7 November 1985	Candy VK4NES	23 December 1985
Margaret VK2QVQ	23 March 1981	Les VK4NME	5 September 1982
Bobbe VK2PKS	6 October 1977	Valerie VK4NHJ	21 August 1979
Frede VK2SU	26 July 1980	Mary VK4PZ	9 March 1981
Wendy VK2YK/VKD	20 March 1982	Cecily VK4QV	8 September 1983
Jean Darling	23 November 1983	Josie VK4VAN	27 February 1983
Lorrie VK3ACO	8 May 1979	Val VK4VAV	7 April 1983
Rae VK3AYL	20 April 1976	Jenny VK3ANW	21 April 1978
Alice VK3BAE	4 March 1985	Meg VK3AOV	29 April 1980
Mavis VK3BIR	23 August 1975	Mae VK3BMT	20 March 1982
Joan VK3BJB	2 August 1976	Judy VK3BYL	4 April 1978
1 Secretary	1 September 1976	Lorraine VK3ML	14 July 1983
Janet VK3BTU	1 September 1977	Margie VK3PWA	12 February 1981
Barbara VK3BYK	1 February 1984	Marlene VK3SQO	10 July 1979
Valerie VK3CVV	22 February 1985	Joy VK3SYJ	14 July 1979
Margaret VK3CYA	25 March 1981	Denise VK3YL	20 April 1978
Kim VK3CZL	8 November 1983	Pauline Koen	24 December 1983
Jean VK3DMM	24 July 1985	Gill Whorpen	13 March 1986
Margaret VK3DML	6 June 1977	Bev VK3GDE	2 March 1980
Marlyn VK3DMS	24 October 1977	Helenie VK3HSL	23 November 1983
Valde VK3DOV	25 March 1981	Sue VK3NSU	2 October 1980
Bron VK3DOV	8 November 1982	Inge VK3OVL	31 March 1984
Gwen VK3DYL	20 April 1981	Trish VK3QV	3 December 1984
Marlene VK3HJO	3 October 1978	Margaret VK3GOM	21 June 1980
Mavis VK3KS	22 August 1975	Poppy VK3YF	3 July 1978
Joan VK3LN	19 October 1981	Gillian VK3YL	15 September 1978
Judith VK3NLY	28 July 1985	Christine VK3ZLZ	17 December 1983
Dorothy VK3PBL	11 May 1983	Colin Couch	20 October 1977
Kathleen VK3PE	26 November 1982	Deanne Hugo	25 August 1980
Clarice VK3UE	29 October 1976	Jane Greenacre	24 December 1983
Jessie VK3VAN	12 February 1981	Lyndie Francis	13 May 1985
Joanne VK3VBC	17 March 1978	Helenie VK3HSD	20 December 1977
Justine VK3VJL	6 April 1978	Grace VK3TNN	9 July 1985
Jean Tuerbridge	3 August 1975	Sue VK3ZBV	25 August 1979
Kate Duncan	11 August 1975	Mavis VK3BW	9 April 1986
Rae Fowler	18 November 1978		
Janet VK3W	9 June 1979		
Bronwyn Lewis	2 October 1980		

Christel DF1LV	11 December 1982	Gerry KD7RA	19 January 1984
Christa DJ1TE	15 September 1979	Lynn ZL2PQ	25 December 1982
Anny DF2SL	15 September 1979	Pauline ZL2COW	4 November 1983
Heidi DF3LX	12 March 1983	Pearl ZL2QZ	22 April 1978
Margot DK5TT	1 November 1981	Gail ZL2TZG	17 January 1985
Aimee FK8FA	22 October 1984	Carol ZL2VQ	30 October 1981
Sheila G3HCQ	20 May 1981	Lee Z3LYL	27 January 1985
Ann G4EYL	28 March 1981	Diana Z5EGH	1 June 1977
Diane G4EYL	19 December 1978	Pat Z5BVC	20 November 1983
Rae G4JMT	8 March 1984	Alice KD7SH	26 April 1984
Gila G4KVR	1 November 1981	Joan KD7YB	11 April 1983
Joy G4OLZ	17 December 1984	Jan KP7F	20 December 1978
Dee G4VGL	17 December 1984	Shirlee KD7Y	1 October 1980
Jessie G4VGL	17 December 1984	Marion WAT7LL	29 January 1986
Shirley G4MLLS	20 December 1980	Lee KB8RT	2 October 1980
Anne G4MUDX	23 May 1984	June KM8E	10 February 1985
Kay G6MK4Y	17 December 1984	Shirley W0SHVEH	1 February 1984
Fumi JA1AEQ	21 September 1984	Ann K9KAK	22 August 1983
Akiko JH6GMZ	8 February 1985	Zdena OIC2BI	13 February 1986
Nanako J8IVL	8 July 1984	Marie-Jeanne ON4AYL	1 September 1985
Mikayo J8JCUQ	14 January 1985	Agnes PA3DR	12 June 1981
Etsuko J8KVP	14 January 1985	Hi PADHIL	12 June 1981
Kenji K1UUV	23 March 1981	Paula PA0ULA	1 November 1981
Karla WA1UNJ	10 December 1977	Inge PY2YJ	23 June 1984
Phyllis W2GLB7	23 July 1978	Halle V6EAPJ	1 October 1980
Christine WB2YBA	1 June 1978	Elizabeth VE7YL	1 October 1979
Jessie KAC0EO	19 January 1984	Bobby VE7CBK	28 October 1978
Liz WC0D	1 November 1978	Muriel VE7JH	10 October 1985
Mary Ann WA3QHP	6 October 1981	Junia Y8UNJ	8 February 1986
Ruthanna WB3QCN	30 March 1981	Acie ZL1ALE	12 December 1979
Liz WB3EFO	19 October 1983	Celia ZL1ALK	1 November 1981
Edith WA4SRD	17 October 1979	Win ZL1B8N	26 December 1985
Betty KASONE	20 November 1985	Clarie ZL1BDZ	13 March 1977
Mary KESJOL	10 February 1986	Eva ZL1BZ	17 April 1982
Melanie KESJOL	11 May 1982	Lesley ZL1BZ	11 May 1985
Derleen WB5FQK	16 January 1985	Gill ZL1FV	8 November 1983
Betty AG8C	1 August 1985	Shirley ZL1MY	20 November 1983
Jennie K8BN	9 June 1979	Vicki ZL1OC	11 September 1977
Joanne K8BV	16 October 1982	Cathy ZL2ADK	30 October 1982
Mary KB9CLZ	22 October 1984	Alma ZL2APV	17 December 1984
Melanie NB9GR	27 June 1985	Betty ZL2AZ	11 January 1984
Claudia NB9QZ	27 June 1985	Jos ZL2BAO	1 November 1981
Joanne NB9LFZ	1 August 1985	Marilyn ZL2BOA	16 September 1984
Jessie WA8OET	17 January 1984	Joanne ZL2BOD	28 December 1984
Martha KA7CRO	2 March 1982	Anna ZL2BOV	23 January 1984
Daurel KC7TE	21 December 1977		

became a silent key in April. Many who knew Kath VK3NKM, of Coobar Peddy, will be sorry to hear of the death of her OM, Lester, a few months ago.

NEW MEMBERS

We are pleased to welcome Mavis VK3BKW; Maria VK3BMT; Lee Z5LYL; Marion WAT7LL; Mar KESJOL, Zdena OK2BBI and Gill Wardrop. Helen G4MKNG has now changed her call sign to G4KNQ.

Correction to April AR - Alma is VK3BAE not BAO as published.

SUBSCRIPTIONS

It may not be generally known that a reduced subscription rate is available, on application, for full pensioners and full-time students.

Until next month - 73/33, Joy VK2EBX.



QSP

RESISTOR KIT

A Mini-Melf (SMD) laboratory kit contains 6050 metal film resistors divided into 121 different values of 50 pieces each ranging from 10 ohms to 1 megohm.

The resistor value is packed in its own plastic phial, which is held in two plastic tray dispensers with the resistors clearly identified. Total housing size is 300 x 245 x 35 mm.

The kit is complete with technical data, pocket colour code chart and colour wall chart.

From Electronic News, p10 - April 1986

ALARA BIRTHDAY ACTIVITY DAY

July is an important month for ALARA, born 26th July 1975.

Last year we organised a Birthday Mini-Contest, but this year we have decided to hold a special YL Activity Day to celebrate our 11th birthday. (Details were in June Amateur Radio). We are hoping the earlier starting time, 0400 UTC will give some of our DX friends a chance to call in. It would be nice if the sun could develop measles about then, but this might be too much to hope for.

We are hoping to hear from a many YLs as possible, so do try and join us, even if you can only spare a few minutes. Make a note of the date - Saturday, 26th July.

MRS FLORENCE MCKENZIE CW TROPHY

Firstly, I had better set the record straight, (May AR). This trophy is awarded annually to the VK Novice YL operator with the highest CW score in the ALARA Contest. (Not the highest scoring VK YL). I pass the gram to look over, and I omitted a recent important word. My apologies.

While on the subject of the Mrs Florence McKenzie CW Trophy, I would like to stress that all novice YLs are eligible to compete for it, whether members of ALARA or not. The minimum attainable score of 50 points. The actual trophy, because of its size and weight, will not be forwarded to the winner, but an attractive certificate bearing a photo of the trophy will be sent to the successful novice YL each year.

How about dusting off those keys and giving it a go? There are plenty of CW operators anxious to give you a contact. (Remember also, that the points are doubled for CW contacts). If you have

not actually attempted a CW contact before, the ALARA Contest is a very good starting point. You will probably find, as I did, that the majority of operators are very helpful to newcomers, and will readily adjust their speed to yours. It is not necessary to be a real whiz-kid! After a contact or two, you may even begin to find that it is more fun than you thought!

ACTIVITIES

VK3 will be having a birthday luncheon on Sunday, 27th July 1986, at the QTH of Jessie VK3VAN. All YLs are welcome - please bring a plate.

The VK5 Annual Get-together will be held this year on Sunday, 20th July, at 12.00 at the Belair Hotel, and afterwards for coffee at the QTH of Joy VK3YJ. All YLs are invited to join in for coffee from 2.30pm. Please contact Meg VK5AOV before 10th July.

In the John Moyle Contest, Bev VK6DE, worked the six hour section from a beach at Geraldton with the Geraldton Amateur Radio Group.

Gill VK6YL, and Christine VK6ZLZ, worked the 24 hour section from Penguin Island with the WA Repeater Group.

Heartiest congratulations to Jenny VK5ANW, on becoming President of the WIA - VK5 Division. We are very proud of you, Jenny.

Congratulations also to Mavis VK3KS, and OM Ivor VK3XB, on attaining the first CW certificates in the SA Jubilee 150 Award.

In addition, Mavis was the first YL to gain the Award on CW.

CONDOLENCES

To Mavis VK3BRE, whose OM Alec VK3AAP,



Awards

Ken Hall VK5AKH
FEDERAL AWARDS MANAGER
St George's Rectory, Alberton, SA 5014

AWARDS ISSUED RECENTLY

WORKED ALL STATES — VHF (144 MHz)
189 Roger Bowman VK5NY

DXCC OPEN SECTION
233 John Meagher VK2AMV

WORKED ALL VK CALL AREAS
1456 Hiroshi Sugimori JA3PG
1457 Roger Hunter GWA0FC
1458 Serge V Sasov UR2RKS
1459 Vladivostok Club Station UK0LAA
1460 Prymorsky Club Station UK0LAG
1461 Victor Wasiliev UA5UKL
1462 Gennadi Igumnev UA6FCA
1463 Gennadi V Treus RT5UD
1464 Nikolaj Sergienko UB5UAL
1465 Yakutsk Club Station UK0QAA
1466 Vladimir Chernukhin UA0FDZ
1467 Oleg W Lagunashvili UA5TDX
1468 V A Andreyev UB5ICD
1469 Yuri Petropavlovsk UA6LBO
1470 George Ignatov UB5HBT
1471 Kemerovo Club Station UK9UBM
1472 V F Salomatin UV3FO
1473 Igor L Zepain UB5LCV
1474 Alexander L Rubtsov UA5JCQ
1475 Vladimir Trubov UA0LBM
1476 Riga Club Station UK2GDZ
1477 J Jans Fauzy YB6MF
1478 Rudiger Hoff Y23DG

HEARD ALL VK CALL AREAS

110 Alexander Zhigachov UA6-101-62
111 Serge Nestorov UB5-059-258
112 Nikola, Kostilov UA3-170-1106
113 A Pyodorov UA1-189-738
114 Leonid Ilich UB5-080-133
115 Yuri Bodrov UB5-070-546

VK5 JUBILEE 150 AWARD

Amendments to rules with effect from 2359 UTC, 12th May 1986

If after the above time, you work someone who already holds this Award, the contact brings you an extra 15 points; if this person holds two certificates, an extra 30 points, three certificates 45 points, etc. For these extra points, the certificate number must be exchanged and quoted in the application. Also, the extra points can be claimed only once per station, per band.

If claiming these extra points, band points cannot be claimed in addition, except for new contacts.

Thanks to Graham Horin-Smith VK5AGZ, for supplying the information.

THE WORKED ALL BRITAIN AWARDS

The Worked All Britain Awards (WAB) Group was founded in 1968 by the late John Morris G3ABG, to promote a greater amateur radio interest in Britain.

The group promotes an award program, contests and activity weekends.

WAB makes regular donations to groups such as the Radio Amateur Invalid and Blind Club, who help less fortunate members of the amateur radio fraternity.

The award program is based on the geographical and administrative divisions of Britain. QSL cards are not required, only log entries. Special log books are available to assist in the claiming of awards.

The award scheme is open to licensed amateurs and Short Wave Listeners.

BASES FOR THE AWARD SYSTEM

Great Britain and Northern Ireland are divided geographically into a grid system. In Great Britain this is referred to as the National Grid Reference (NGR) and in Northern Ireland as the Irish Grid.

Both systems divide the countries into 100 km x 100 km grid squares which are referred to as large squares. On the NGR these squares are given a two letter reference, eg HP, SP, TL, etc and on the Irish Grid, a single letter reference, C, D, G, H and J.

These large squares are then broken down into

10 km x 10 km squares which are given a two number reference 00, 01, 02 ... 99. The large square and the two number reference then gives rise to the WAB area; eg SP36, TL00, J04, G82, etc.

Great Britain and Northern Ireland are broken down for administration purposes into counties. The boundaries of these counties are drawn up arbitrarily.

The WAB area is then linked with the county, eg HP5 Shetland Isles, SP38 West Midlands, SS08 Mid Glamorgan, C82 Antrim. There are in excess of 4000 WAB areas.

WAB LOG BOOKS

To help with the logging of WAB contacts, a special log book is produced. This book lists each WAB area, county by county, together with a list of towns and villages lying in each area. Claim sheets for the awards are supplied with this book.

The log book is available, priced five pounds (US\$7), from: Brian Morris G4KQJ, 22 Burdell Avenue, Sandhills Estate, Headington, Oxford, OX3 8ED, England.

Please make cheques or money orders payable to The Worked All Britain Awards Account.

The main WAB awards are:

WAB OVERSEAS INTRODUCTORY AWARD

This award is open to non-European stations and is intended as an introduction to WAB. The award requires that 25 WAB areas and 10 counties are worked.

WAB 75 AREAS AWARD

This award is given for working WAB areas. There are six classes of award — Basic, Bronze, Silver, Gold, Platinum and Sapphire. The requirements are 100, 200, 400, 600, 800 and 1000 areas.

WAB COUNTIES AWARD

There are 78 counties in Great Britain and Northern Ireland. Awards are given for working 55 and 76 counties.

WAB LARGE SQUARES AWARD

There are 81 large squares in the WAB list. Awards are given for working 30, 40 and 55 large squares.

WAB NEWSLETTER

A regular newsletter is produced containing information about WAB.

WAB QSL CARDS AND STICKERS

Attractively designed and priced QSL cards and stickers for your existing cards are available.

New members are assured of a very warm welcome.

WIA 75 AWARD RECIPIENTS

The following amateurs are now recipients of the WIA 75 Award

Cert. 659 D A R Rosan ZLAFO
Cert. 660 Gunawan Wilsonso YC0BOK
Cert. 661 Tsuneo Chmoe JH3UBA
Cert. 662 William Gell Shaw V5AIEI
Cert. 663 George Dymitko Jiman YB3CDL

VI PREFIX

Between 1st July and 1st December 1986, amateurs in South Australia may use the V6 prefix, to help celebrate the 150th Anniversary of the founding of the State.

For amateurs outside Oceania, this will present an opportunity to gain the Jubilee 150 Award at a lesser grade than that originally intended.

The rules as printed in *Amateur Radio*, October 1985, page 47, will gain the Gold level award. V6JSA and five other V6s or 15 V6s will achieve the Silver award (32 or 4 IRCs) from VK5OU, Box 1234, GPO, Adelaide, SA. 5001

REAR CASTLEMAINE AWARD

The Royal Naval Amateur Radio Society, Australasian Branch, has decided to create an award called the Castlemaine Award to commemorate the 75th Anniversary of the Royal Australian Navy and the 45th Anniversary of the launching of HMAS Castlemaine.

It has been arranged by members of the HMAS

Castlemaine Group of the Royal Naval Amateur Radio Society, who will supervise the checking of logs and issuing of Certificates.

The Award shall be open to all radio amateurs and SWLs on a hard basis.

Applicants must establish two-way radio amateur communications with RNARS members residing in Australia. Points will be awarded on the basis of one point per VK RNARS member, or any VK RNARS special station, two points per HMAS Castlemaine Group member and three points for radio contact with the wireless office (VK3RAN) on board HMAS Castlemaine at Gem Pier, Williamstown, Victoria. Applicants must have contacted one HMAS Castlemaine Group member and one contact with VK3RAN HMAS Castlemaine to become eligible for the Award.

The commencement date is retrospective to 1st January 1986.

To qualify, the following is required:

For amateurs residing in Australia and New Zealand* — SSB 20 points or CW 10 points.

For amateurs residing in Oceania — SSB 15 points or 10 for CW.

For amateurs residing outside Oceania — SSB 10 points and seven points for CW.

(* For the purpose of this Award, it is proposed that 2L amateurs be grouped with VK amateurs, rather than Oceania).

In addition, for amateurs residing outside Oceania, contacts with VK RNARS members (including VK3RAN Group Members) and with VK3RAN HMAS Castlemaine Radio Office on the 3.5 MHz band will count double points.

For the purpose of this Award, any RNARS Maritime Mobile Member, when located inside Australian Waters, will be counted as a VK member.

The Award will be endorsed only at the request of the applicant, for the following endorsements:

All CW; All SSB; All 3.5 MHz; All 14 MHz

Only recognised RNARS frequencies will be used on Nets — CB 14.30, 3.227, 7.020; 10.140, 14.052, 21.052 + QRM SSB 1.925; 3.613; 7.090; 14.140, 21.165 + QRM

The members of the HMAS Castlemaine Group will be rostered for duty in the Wireless Office. In addition VK3RAN will be on air as often as possible on Mondays and Tuesdays for the 1030 UTC 80 metre SSB, and CW nets, and the Castlemaine Group members will also be on air on these Nets.

To claim the Award no QSLs are required. Send full log details showing RNARS VK Call Sign; RNARS Number, Date, Time and QTH, Frequency and Mode and an application fee of \$43 to Margaret Nally VK3OU, Award Custodian, PO Box 144, Glenelg, Vic. 3184, or to Jean D'Andrea VK3OJN, PO Box 148, Moreland, Vic. 3058.

Please ensure that all cheques are in Australian Currency and are made payable to the RNARS Castlemaine ne Group.

Please clearly state the endorsements claimed.

Certificates to successful applicants will be forwarded airmail, post paid, as soon as possible after the claim has been checked.



Club Corner

MANLY WARRINGHAH RADIO SOCIETY

The Manly Warringah RS wishes to invite all members and visitors to attend the Annual General Meeting on Wednesday, 9th July 1986, at 7.30 pm, where duties such as election of new office bearers and committee will be conducted.

The Manly Warringah Radio Society celebrated 10 years as a radio club, by re-fitting the club radio shack with a new HF transceiver, plus the licensing and installation of a 70 cm voice repeater.

The club repeaters, VK2RMB 148.875 MHz and 438.175 MHz, provide excellent coverage, primarily throughout the northern beaches of Sydney. The Society also operates a multi-protocol packet repeater which was the first operational packet repeater in New South Wales.

Location is the Warringah Volunteer Services Centre, Aumana Road (East), Terrily Hills.

FOREST HIGH SCHOOL

The Forest High School, invites amateur operators, especially ex-student staff, to participate in an Amateur Radio Net to be held on 4th July 1986, as part of the school's 25th Anniversary Celebrations.

The school station VK2KFA will be operating on 80, 15 and two metres (FM and SSB), during the day and will welcome any calls.

For further information contact: The Amateur Radio Group, Forest High School, French's Forest, NSW. 2086.

Contributed by J A Reed VK2KMK

PACKET RADIO IN ALICE

Packet radio was inaugurated in Alice Springs on 14th May 1986, when VK8RP and VK8TU established a link using a TAPR TNC2 and an EPC-84. Quickly to follow on-line were - VK6s TM, B6 and ZND, also using PK-84 TNCs.

The protocol chosen by the Alice amateurs for the local standard is AX 25 Level 2 Version 2, in order to conform with the Region 3 designated standard, as well as to have compatibility with the up-coming amateur satellite capabilities of JAS-1 and AMSAT II-C.

Other amateurs in Alice are also currently working to come up on-line soon.

As all of the amateurs now on packet in Alice Springs are also active on OSCAR, the packet network in Alice Springs will be able to extend beyond its physical isolation via satellite links.

The amateurs involved hope to be able to experiment with such links in the near future with other stations around Australia. If there is anyone interested in trying out an OSCAR packet link with the Alice, or have any information to help, the group will be very pleased to hear from you. Write to Alice VK8RP, 44 Memorial Avenue, Alice Springs NT 5750.

Contributed by Rick Pembrey VK8RP

DEVIL NEWS from North West Branch

A group of 14 members and three visitors attended the last meeting of the Branch, when all routine matters were attended to.

During General Business, the meeting was told that a new Broadcast List would be prepared shortly by the Southern Co-ordinator.

VK7s OW, KH, SF, EG and ZBT were thanked by Rob VK7KA6, for their assistance with the Rotary Display Auction which was held during May. Rob also suggested that planning work should begin now for TARK 87, and members should begin collecting surplus equipment for the TARK auction.

Planning for Camp Quality is proceeding very

On the first Sunday in May, the VK7WI Weekly Broadcast began at 0900 EST and resulted in Andrew VK7ZHA being awarded the Gony Award for the month - he forgot the change of time and slept in!

The club now has its own QSL card for station VK7NW, which coincides very well with the setting-up of the station in another part of the Penguin High School. Recent Activity Nights have been taken up with the move as the new room is on the opposite side of the building. As the new room is much larger for the permanent set-up of VK7NW, regular operation from the station should be much better.

Greg VK7ZBT, has been given the job of procuring a Great Circle Map and Bill VK7WL, is to get a large map of Australia for the station wall.

There is still much work to be done with the serials and Greg has volunteered to make a 70 cm antenna.

There has been very little RTTY operation of late, but with the new location it is anticipated that regular broadcasts will resume. (Just how soon this happens of course will depend on how many volunteers volunteer when needed).

One of the Branch members, Owen VK7OL and his wife Nancy, are doing an extensive trip of the mainland, visiting their children in South Australia and Darwin. They also intend to visit many amateurs along the way. Owen and Nancy are expected home next month.

Meetings of the Branch are held at the Penguin High School, on the second Tuesday of each month, commencing at 7.30pm. Visitors are most welcome and are directed to the venue via the two metre repeater - Repeater 3.

On 20th April, the North West ATV Group commissioned its second Amateur Television Repeater. It is operational under the call sign of VK7RAE.

The repeater is located on Kelseys Tier, near Devonport on the property of Ron VK7RN. Ron has kindly made his property available as a site for the repeater and thanks are extended to him.

The prime role of this repeater is to allow amateurs in the Devonport area to transmit and receive noise-free pictures in Devonport and the surrounding area.

Uplink vision carrier frequency is 444.250 MHz and downlink 579.250 MHz (Horizontal Polarisation). Persons interested in viewing the output channel are reminded that the downlink frequency falls in Band 4 allocation of the UHF Television Spectrum (but simply, this appears at Channel 34½ on a standard UHF television tuner). However, the proverbial piece of wet string will prove insufficient for noise-free reception of the device as its power output is relatively low. A good quality high gain antenna cut for UHF will guarantee good pictures.

The radiation pattern is omni-directional with a full 360 degrees in the horizontal plane.

Known amateurs to be transmitting good quality pictures through the repeater are Jack VK7WJ and VK7ZAP.

It may be timely to point out to listeners that we often hear and read that the majority of amateurs are Black Box and appliance operators these days, and where are the true amateurs? 7.7 The repeater and the other ATV repeater, (VK7RTV, which is installed on Mount Duncan, with the exception of the receiver IF systems, are completely home-brew. This includes the receive converters, control systems, transmitters and all peripherals.

To date, much experimental work has been carried out by the ATVs with antenna and propagation on the UHF bands.

Thanks to Tony VK7AX for supply of the ATV

Contributed by Max Hardstaff VK7KY

ORANGE AMATEUR RADIO CLUB

During December 1985, the Orange Amateur Radio Club made free checks of two-way radios which are used during bushfires. The checks were carried out by professional mechanics using the latest test equipment, under the guidance of members of WIGEN.

Minor adjustments were made where required



Bob Moore VK2DSM, Vice-President of OARC, operates the Motorola Test Set.



and major problems were referred to commercial repair shops.

20th JOTA 1986

The 29th Jamboree on the Air will be held over the weekend of 18-19th October 1986. The event will begin at 0001 hours local time on the Saturday and will end 48 hours later at 2359 hours local time on the Sunday. Stations may operate for all or any part of this period.

Participation is extremely simple. All stations must operate strictly in accordance with their own national amateur radio regulations.

Call "CO Jamboree" or answer any station using this call.

Any authorised frequency may be used. It is suggested that operators call, or search for stations, around the agreed World Scout frequencies listed below and that, once contact is made the operators move to another frequency to continue the contact.

Agreed World Scout Frequencies
CW: 80m - 3.590; 40m - 7.030; 20m - 14.070; 15m - 21.140; 10m - 28.190 MHz
Phone: 80m - 3.740 and 3.940; 40m - 7.090; 20m - 14.290; 15m - 21.390; 10m - 28.690 MHz.

All stations are required to send in a report of activities in accordance with arrangements made by the National JOTA Organiser.

An attractive participation certificate has been designed and supplies will be sent to all National JOTA Organisers well before the event. The World Scout Bureau will also send QSL cards.

Contributed by Laurie Naps, Secretary General, World Organisation of the Scout Movement Organisation.

**29th Jamboree on-the-air
is a Jamboree-sur-le-cable
18-19 october 1986**



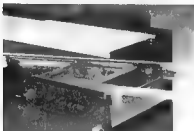
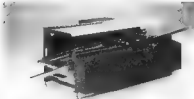
Send your report to:

World Scout Bureau, 1 Avenue de la Paix, 1201 Geneva

Box 94, 2001 Sydney, Australia

WAVE SOLDERING MACHINE

With the increased use of Surface Mount Devices (SMD) the release of the MPS-200 soldering machine from Zevatron is well timed. This unit incorporates the patented *Chip Wave* especially designed for reliable soldering of SMD devices, even when boards are very densely packed. The *Chip Wave* is a turbulent wave that is precisely modulated and is independently controllable.



The MPS-200 can be used as an ordinary machine without the additional wave being installed or, if fitted, it may be simply turned off for conventional PC board work. The machine is available with the standard working widths of 300 or 360 mm. The solder pump is made from special high-tensile titanium alloy and special steel is used for nozzles and solder channels.

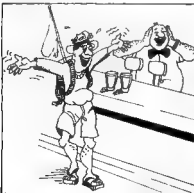
The wave soldering machine can be the basic building block for an entire soldering production line as it is designed to grow with the customer's needs and become a fully automated system. Automatic replenishment of solder and flux is available and the MPS-200 series may be fitted with component insertion stations, conveyor and return conveyor belts, ascent and descent units, transverse and angular transfer units, etc. In order to optimise material and work flow.

Call Alphatron on (03) 758 9000 for further information or write to 1761 Ferntree Gully Road, Ferntree Gully, Vic. 3156.

HOLIDAY WIN WITH TALL STORIES

The deluxe international hotel, Holiday Inn Surfers Paradise, located on the Gold Coast, will feature a public bar called *Tall Stories*.

In keeping with its name, the walls of the bar will be decorated with a selection of the tallest tall stories, plus illustrations.



A R Showcase

To locate suitable stories, a competition is being conducted whereby anyone entering a 200 to 500 word tall story has the opportunity to win a weekend for two at the facility. One weekend will be given away every month for the remainder of 1986.

Choose any topic, and write between 200 and 500 words and send your story to Tall Stories, c/o Holiday Inn, Surfers Paradise, 22 View Street, Surfers Paradise, Qld. 4217

VICOM WITH COMMUNICATIONS CONTRACT

Vicom Australia Pty Ltd, the Australian-based RF communications engineering company, has won a contract worth \$A526 000 for the supply of MF and HF communications receivers to the Overseas Telecommunications Commission (Australia).

The receivers, manufactured by Dansk Radio AS of Denmark, will be remotely controlled from OTC(A)'s receiver facility at Brinsgelly, NSW. OTC(A) is currently involved in a program to update its MF/HF equipment with state-of-the-art technology.

The total system comprises 24 model RX-4000 receivers, 13 model RC-4000 controllers, matrix switching and associated equipment, and includes specialised custom software which integrates the system to OTC(A)'s particular operating requirements.

Dansk Radio AS was founded in 1920 and has provided high quality communications equipment to over 50 countries. They have been represented in Australia and New Zealand by Vicom since 1976, during which time a large number of transmitter and receiver installations have been made.

Vicom is a fully integrated high-technology company specialising in niche electronics for government and industry.

NEW MONITORING AND SURVEILLANCE SCANNER

The AOR AR-2002, a new programmable monitoring, scanning and surveillance receiver is claimed to be above and beyond anything previously available. Its wide frequency coverage combined with the reception modes of AM, FM (wide bandwidth) and FM (narrow bandwidth) make it ideal for general off-air monitoring, spot frequency monitoring/measurement, selective multi-frequency analysis, spectrum surveillance, detection of innovative transmissions and general scanning.

The AR-2002's two frequency ranges are covered in user selectable increments of 5, 12.5, and 25 kHz. A triple conversion configuration with a first IF of 750 MHz provides a typical sensitivity of 0.3 µV for 12 dB SINAD over its operating range of 25-350 and 800 to 1500 MHz.

Control of the AR-2002 can be either from a professional front panel keyboard or rotary tuning control. External control is also available via a rear panel mounted interface socket.

Twenty internal memories are provided to the user. They can be used to store both frequency and mode information which may then be recalled



manually, or automatically scanned.

The readout is a liquid crystal type indicating frequency, mode, memory channel number, frequency increment, delay on/off, channel lockout and priority operation. A bar type LED signal strength meter allows comparative measurements to be made and aids in direction finding work.

Power requirements are 12 volts DC or 240 volts AC. Antenna connection is via a rear mounted BNC connector. The size, 138W x 80H x 200D mm makes it ideal for both fixed and mobile operation.

For further details on the AR-2002 contact GFS Electronic Imports, 17 McKean Road, Mitcham, Vic. 3132 Phone (03) 873 3777

SCANNING RECEIVER

The Microcomm Model SX-155, a portable programmable receiver, is small, lightweight rugged in construction, and has 160 memory channels which make it ideally suited to the tough life of professional electronics.

The 160 memory channels are divided into four groups of 40 channels, each with its own priority, ie a total of four priority channels.

Frequency coverage is 26-32 68-88 138-176 and 380-514 MHz with a sensitivity of less than 0.5 µV over this range. An automatic search and store function is also built-in.



Using this feature, an operator can set two frequency limits anywhere within the SX-155's range and let the radio do the rest — it will automatically look at each frequency for activity. On finding an active channel, the frequency is stored in one of the upper memories and the search resumes if that frequency is stored on a previous search it will not be duplicated.

The unit is manufactured from tough extruded aluminium section, is powered by re-chargeable NiCAD batteries and is supplied complete with a charger, carry case and rubber antenna.

The SX-155 is available from GFS Electronic Imports, 17 McKean Road, Mitcham, Vic. 3132 Phone (03) 873 3777, to whom all inquiries should be directed.

STRANGE BUT TRUE

A not-so-newly-licensed amateur purchased a 144 MHz Yagi antenna to replace a chimney-mounted collinear used for local FM operation: a few days later he returned to the dealer demanding his money back, saying the Yagi was a far worse performer than the collinear. The dealer was rather surprised and asked the amateur how he had installed it. It then emerged that the customer thought that *vertical polarisation* meant mounting the antenna with its boom vertical and the array pointing directly upwards.

From Radio Communication, December 1985



VK2 Mini-Bulletin

Tim Mills VK2ZTM
VK2 MINI BULLETIN EDITOR
Box 1066, Parramatta, NSW 2150

REPORT OF 1986 AGM

The Annual General Meeting of the NSW Division was held on 5th April, at Granville RSL Club. The meeting was opened at 2.12 pm by the Divisional President, Peter Jeremy VK2PJ. The Returning Officer, Robert Dolphin VK2EDR, advised that there were 622 formal votes in the ballot for the 1986 Council, and that the successful candidates were, in order of polling, Jeffrey Pages VK2BY, Roger Henley VK2ZG, Peter Jeremy VK2PJ, Timothy Mills VK2ZTM, Dennis Williams VK2DXW, David Horsfall VK2KFU, and Mary Jane Cant VK2CMJ. Peter O'Connell VK2EMU, was elected Returning Officer for 1988.

Under General Business, a motion was raised from the floor that items 9(i) and 9(k) on the Agenda be dealt with first. This was defeated, and the meeting moved to consider Motion 9(a). A point of order was raised that this motion should have been notified as a Special Resolution and therefore could not be considered by this meeting. The Chairman accepted the point of order, following which a motion of dissent in the Chairman's ruling was moved and carried. A lengthy debate then ensued on whether or not this meeting could vote on motion 9(a), and eventually the Chairman ruled that the motion could be dealt with. Motion 9(a), that Life Membership of the Wireless Institute of Australia, NSW Division, be conferred upon Timothy I Mills VK2ZTM, was then put, and defeated.

Item 9(b), that consideration be given to expanding the novice sub-band on 80 metres, was carried.

Item 9(c), that necessary steps be taken to review the national band plan for six metres such that Australia conforms to international practice, in both FM simplex and repeater operation, was carried.

Item 9(d), that the necessary steps be taken to review the national 23 cm band plan such that (a) the FM (repeater and simplex) portion conform with the international frequency segment, (b) the radar system centered on 1275 MHz be guard band protected, and (c) other changes be incorporated to further the utilisation of this band, was carried.

Item 9(e), was withdrawn.

Item 9(f), that the Divisional Historian, Jo Harris VK2KAA, be given a donation of \$540 to help defray expenses already incurred in compiling a VK2 history, and that the Division purchase two copies of each issue of Amateur Radio for her use, was carried.

Item 9(g), that this meeting re-affirms that the NSW WICEN Committee is a sub-committee of the Wireless Institute of Australia NSW Division, and that in future their accounts be incorporated as part of the Divisional Accounts, was carried.

Item 9(h) was amended to read, that the meeting recommend to Divisional Council that the Conference of Clubs each year nominate two members who may be appointed by Divisional Council to the State Repeater Sub-committee, and that the present State Repeater Committee be disbanded, and the amended motion was carried.

Item 9(i) was amended to read, that time at the Annual General Meeting be allocated to allow items of general business to be discussed from the floor, and that such discussion be held after the Notices of Motion, and the amended motion was carried.

Item 9(j), that this meeting receive a report from Divisional Council on the case of 'Reedman vs Rockdale Council Tower Case', was carried. Jeff Pages VK2BY, presented the report on behalf of Divisional Council, and this was followed by a discussion of various aspects of the case.

Item 9(k), that the VK2 Division donate \$1000 to the 'Dennis Reedman Tower Fund' or to Dennis Reedman VK2DUY directly, to help towards his personal costs of \$3500 incurred in winning his appeal against Rockdale Council, was carried.

Signed Jeff Pages VK2BY,
VK2 Divisional Secretary.

RD CONTEST

It is about six weeks to the Remembrance Day

Contest. VK2 has been the winner for the past two years but now all other States are keen to take it away from us. VK2 needs the help of all within the State to ensure that it remains for a further period in New South Wales. Try to set aside as much of the weekend as possible to enter and take part. The rules for the contest will be found in the Contest Column in this issue.

WICEN

The Annual City to Surf WICEN exercise will be conducted on Sunday morning, 10th August. All amateurs in both Sydney and the surrounding areas are invited to take part. You require two metre equipment which can be used in a portable or hand-held operation. Both the weekly Divisional Broadcasts and the Thursday night (8.30 pm VK2RWS 7150) nets will carry further information.

Future WICEN exercises include the car rally at Batemans Bay in late September and the Hawkesbury River Outward Bound Canoe Classic, in late October.

SURPLUS EQUIPMENT

The list of items available from the Divisional Office as mentioned in the May Mini-Bulletin has now been replaced with a new list. If you would like a copy send a SASE to the Office at PO Box 1066, Parramatta, NSW 2150.

75th ANNIVERSARY MEDALLIONS

The New South Wales Division awarded its allocation of medallions to the following for services to the Division and amateur radio.

Margaret and Cec Bardwell VK2IR

Rex Black VK2YA

For the long term and continuing work with the NSW Division Correspondence

Founder of the (NSW) Youth Radio Scheme and the concept of its aims in training.

Long term service to amateur radio and his present involvement in the Museum demonstration station VK2BOK.

Founder of and the long term work for the Westlakes Amateur Radio Club.

Services to the Division and its office facilities.

For services to the Division for many years at the Crown West property in many capacities.

Services to VK2WJ Dural and its facilities.

A foundation member of the St George Amateur Radio Society and long term service to them.

Long term service to amateur radio in the Hunter Branch and the Hunter Region.

Founding of the Western Suburban Radio Club and later the Liverpool and District Amateur Radio Club. Member of the Council for many years, including President and Secretary.

Divisional Librarian. For services to the Division with the Parramatta facilities.

Services to the Wagga Amateur Radio Club and

Ray Wells VK2TV

Barry White VK2AAB

Deve Wilson VK2KDW

The presentations of the Medallions were made either at the AGM or individually to them.

Merit Certificates were also presented to various members and a listing will appear in a later issue of the Mini-Bulletin.

NEW MEMBERS

A welcome to the following members who joined during February and March 1986:

D J S Baume VK2HDB, Narrabeen; R Bennett Assoc, Hornsby; P H L Blake VK2NDG, Beecroft; R P Buono VK2PEL, Fairy Meadow; D D Coffey Assoc, Gordon; N Cowgill VK2NEV, Eden; G F English VK2JPR, St Ives; M S Ewing VK2ERX, Epping; R A Fraser Assoc, Wollstonecraft; M J Grebert VK2BYG, Merewether; F F Hicks Assoc, South Camden.

N H E Kinsler VK2CHN, Scotland Island; E Lanning VK2MEL, Thredbo Village; D E Lee VK2ALB, Tumblong; M G Morton Assoc, Hamilton South; W R Petrone VK2DCC, Fairfield; R A Plater Assoc, Concord; B G Powell VK2AIZ, Arcadia; P G Vane Assoc, Dubbo; E J Virtue VK2EJV, Dunoon; H W Waugh VK2GHW, Rydalmere; J Wippo VK2AUW, Chromer; S Wood Assoc, Hornsby Heights; R W Blake Assoc, Manly; J M Castellan Assoc, Caringbah; D A Clark VK2YDC, Balmain; W J Davis Assoc, Manly; G B Thrum VK2CGT, Maitland Bay.

TOWNS CASE

Following is a statement regarding the Reedman Tower Case which was agreed to following discussions between the writer and Dennis Reedman.

The case of Dennis Reedman VK2DUY versus Rockdale Municipal Council, and the involvement of the WIA NSW Division in this affair, has been the subject of some discussion and correspondence in recent months. In particular, the question of financial assistance to Dennis Reedman from the Division was raised at the 1986 Annual General Meeting and a resolution to donate \$1000 towards his expenses was carried.

From what was said at the Annual General Meeting, the following further discussion between myself and Dennis it has become apparent that, for variety of reasons, the Divisional Council of the day was not fully aware of the circumstances surrounding the case at the time that the original decision regarding financial support was made. Undoubtedly, a contributing factor here was the retirement from Council of Susan Brown in November 1985 as up until that time Susan had been acting on behalf of the Divisional Council in this matter. This change of personnel at what was a crucial time in the case, led to the misunderstanding between Dennis Reedman and Divisional Council, which subsequently developed into a standoff situation.

It would now appear that the case has been acted correctly in its dealings with Rockdale Council and the Land and Environment Court, and in view of this I have no hesitation in retracting my report on the case which was published in Amateur Radio Action, Volume 8, Issue 13, and in

particular any remarks which may have inferred that Dennis had acted improperly in any way. In fact, immediately after the Annual General Meeting, I contacted the editor of Amateur Radio Action to request that my report not be published, but by then it was too late.

With hindsight it is easy to say that the Council should have done this, or that Dennis should have done that, but what happened is new history and cannot be altered. Thankfully, this dispute is now resolved to the satisfaction of all concerned, and in particular, I would like to thank Colin Davidson for his assistance in reaching this settlement.

Signed: Jeff Pages VK2BYV,
Secretary.

NEW YORK TOWERS

Bills have been introduced in both houses of the New York state legislature relating to the construction of towers. The legislation would restrict towers to the height of the tree-line or 50 feet, whichever is lower. An exception is given to towers attached to a residence.

From The ARRL Letter 9th May 1986



VK3 WIA Notes

ZONE LIAISON CO-ORDINATORS

Zones will be represented on Council by the following councillors. This means that each Zone of the Division has a voice on Council. North-west Zone: Des Clarke VK3DES, Midland Zone: John Adcock VK3ACA; Eastern and East Gloucester Zone: John Ambler VK3DUE, North-east Zone: Barry Wilton VK3XV; Western Zone: Geoff Smith VK3ADB.

SPECIAL OFFICERS

Broadcast Chairman: David Johnson VK3YWZ, VTAC Chairman: Peter Mill VK3ZPP, WICEN Chairman: Leigh Baker VK3CDP, Disposals Officer: Arthur Fraser VK3BIL, Building and Property Officer: Neville Stinger VK3CNS.

Class and Education Officer: Fred Swainston; Intruder Watch Co-ordinator: Bill Wilson VK3DXE; Book Sales Officer: Peter Ford VK3YTB, Librarian and Historian: John Adcock VK3ACA.

VOTE OF THANKS

During the course of the meeting, a vote of thanks was made to Jim Linton VK3PC, for his efforts and the contribution made by him over the last three years as President of the Division.

Forward Bias

Ken Ray VK1KEN

Box 710, Woden, ACT. 2606

display of logistical supremacy, by Phil VK1PJ.

And, now for the information you are waiting for — the winner of the inaugural VK1 Favoured Club Award for the contacts on the most number of bands in the contest. The winner is

WK2WQ — Wagge Radio Club.

They worked us on seven bands — 80, 40, 15, 10, 6, 2 metres and 70 cm. They only missed out on 160 and 20 metres. Close contenders were VK3CNE (80, 40, 6 and 2 metres) and, except for no six metre openings, VK8YL (160, 80, 40 and 20 metres).

To those clubs who missed out — we will be there again in 1987, so with the prospect of improved conditions next year, look out for VK1WI.

WIA VICTORIAN DIVISION

412 Brunswick Street, Fitzroy, Vic. 3005

NEW MEMBERS

During the month of April, the following new members were welcomed to the VK3 Division:

Sosebajakti Adinegoro YC0BCA; Anthony Anderson VK3VBG, Emile Armanous, Leigh Baker VK3CDP, Adrian Blend, Stephen Brough VK3PIO, M. Burchadzu VK3XIP, Andrew Chantler, John Davey VK3AWX, Robert Farguson VK3ZRF, Lorraine Gardner VK3ADU, Phillip Gladhill VK3NUJ, Damian Jones VK3PJ, Dale Lemke VK3ZKO, Stephen Lemke VK3ZLR, Mark Mackenzie VK3XIU.

Rodney McNabb VK3DQJ, Malcolm McRae VK3BXJ, Walter Middleton VK3IT, B. Moore, Stephen Muir, John Reardon, Glenn Rickard, Ross Taylor, John Whitehead VK3BLK, R. Gower VK3DAA and Henri Lausberg VK3PHL.

Kurt Brauer HBBAMZ, Stephen Cardwell: John Duffies, Philip Hardstaff VK3XGV, Charles Howes VK3NCH, William Jones VK3PIX, Eric Lawson VK3ZAP, Leslie Pascoe; Many Petroskaskakis, Richard Poole, Tim City Radio and Electronics Club VK2EWC and Guy Wakeham.

ANNUAL GENERAL MEETING

At the recent AGM of the Victorian Division of the WIA the following members were elected to Council. Further appointments will be made in due course and will be announced in this column.

During the meeting, council discussed a number of new approaches which will be published next month.

COUNCIL FOR 1986

John Adcock VK3ACA; John Ambler VK3DUE; Andy Chen VK3DPJ, Des Clarke VK3DES, Jim Linton VK3PC, Alan Noble VK3BBM; Geoff Smith VK3ADB, Neville Stinger VK3CNS, Bill Wilson VK3DXE, Barry Wilton VK3XV.

OFFICE BEARERS 1986

The 1986 Office Bearers for the Victorian Division were chosen from the above and are as follows: President and Federal Councillor: Alan Noble VK3BBM.

Vice-President and Chairman of Council: Barry Wilton VK3XV.

Secretary: Des Clarke VK3DES.

Treasurer: Lindsay Rohrschach VK3KAF.

QSP

AUSSAT

△ AUSSAT Pty Ltd, owner and operator of Australia's national satellite system, is calling for registrations of interest from suppliers throughout the world for the manufacture of second generation satellites, satellite control facilities and equipment.

AUSSAT's second generation system will provide replacement communication capacity for the first generation of satellites and prospectively a range of new communication and other satellite related services.

AUSSAT is aiming to issue a formal call for tenders in mid-1987, with the schedule date for mid-1988, for the finalisation of the contract.

This will enable AUSSAT to launch second generation satellites in 1991, in good time to replace the first satellites which will be nearing the end of their seven-year life.

Meanech is a basic design concept is being developed which will include, for consideration, a number of additional, applications, such as the provision of meteorological capability, remote sensing, mobile communication services and scientific applications.

From Telecommunication Journal, Vol 53, 19/1986



Cartoon contributed by R. J. R. & S. J. R. via Peter Overton VK3DQJ.



VK4 WIA Notes

Bud Pounsett VK4QY
Box 638, GPO, Brisbane, Qld. 4001

CORRECTION

Please note that in the list of Divisional Councilors for 1986, Hugh Shaw VK4BHS, not only had his surname wrongly listed, but his job was also in error. Hugh is the QSL Liaison Officer, has held the post for a couple of years and does a very excellent job of sorting out the inevitable problems that arise in the QSL sphere.

BARIOFEST 1986

To say that this year's event was a huge success is a gross understatement (can you have a gross understatement?). The visitors to the Indooroopilly State High School that Saturday, 10th May, were numbered in their hundreds. There were many exhibits. One in particular was a one man effort by Barry VK4ZAU, who unravelled the mysteries of satellite operation to a large number of interested amateurs. Barry's enthusiasm must surely spark a greater interest in satellite working by more VK4s. Rob VK4KUG and Michael VK4YOB, did a roaring trade in RTTY circuit boards and South East Queensland Teletype Group member subscriptions. The group were offering 20 and 25 percent discounts for de-modulator, modulator and scope PCBs for the occasion. Rob had his computer programmed to give the RTTY story on an impressive colour monitor with pages and pages

of information available at the viewers choice.

Packet radio was on display and likewise, ATV. One of the big attractions of the day was the quantity of bargains available in second hand treasure. Some top-notch items went for almost give-away prices.

Dave Prince VK4KDP, spokesman for the Brisbane Amateur Radio Club and BARCfest organiser, said that this year's affair was the best ever.

SIX METRE REPEATER FOR CENTRAL QUEENSLAND

Gladstone and Rockhampton amateurs are combining in their efforts to put a six metre repeater on the air. The project is still very much in the initial stages. If the plans come to fruition by next summer, this repeater could bring many surprises at the seasonal DX peak, i.e., when, frequency, and location will be advised when to hand.

TOWNSVILLE DOES IT AGAIN, SO CAN YOU!

Backscatter is the official bulletin of the Townsville Amateur Radio Club. In a recent issue, Evelyn Bah, the journal's editor, wrote this — I guess you have all read those tales of gloom and doom about the advanced age of amateur radio

operators, and the problem that may exist for our hobby in the future. I presume the homework has been carried out correctly, so what as a club can we do about it?

We can not put the clock back, but what we can do is to look to the future — and just be on hand whenever the chance turns up to influence operators. Two chances spring to mind for the IARC to do just that in the near future; ie the Fete at the Cathedral School and Entertainment in the Parks. These are both ideal locations to present amateur radio to all ages.

Even if the bands are as dead as a dodo the experienced operator has wonderful tales to tell of how and why and when some great contact was made, or the latest building project and all its possibilities.

If we have all these experienced old timers at home, I feel it is time that we get them out and about occasionally. I think we should forget about our grey hairs and rheumatism and occupy ourselves with youth, in such schemes as the Youth Radio Scheme or School Clubs.

Do not forget it is not only the juniors who will be learning, remember the saying by your pupils you will be taught. Life will not be dull anymore.



Jennifer Warrington VK5ANW

59 Albert Street, Clarence Gardens, SA. 5039

Fifth-Eighth Wave

At the AGM on Tuesday, 22nd April, the following changes to the Constitution were passed

Clause 5 now reads: 5. The Institute will be governed by a Council of ten members. Seven to be elected at the Annual General Meeting of the Institute each year as hereinafter provided. The immediate Past President, the WIGEN Director, and the Federal Council shall by reason of their office be members of the Council without election.

Clause 43 now reads: 43. The Yearly Subscription for Members and Associate Members shall be such sum as may be decided upon by the Council from time to time. **Clause 44 now reads:** 44. Subject to last preceding Clause 43, the first subscription shall be payable on election and subsequent payments at 12 monthly intervals thereafter, except where payment by instalment may be approved by Council.

(See page 4 of the April Journal for full details).

OFFICE BEARERS

Also at the AGM, the following members were elected to Council (and positions decided subsequently):

President Jennifer Warrington VK5ANW
Secretary Don McDonald VK5ADD
Treasurer Graham Ratcliff VK5AGR
Vice-President Rowland Bruce VK5OU
Vice-President Don McDonald VK5AGW
Membership Ken Westerman VK5AGW
Education Officer John Gardiner VK5PJG
DOC Liaison Rowland Bruce VK5OU
Public Relations Bob Allan VK5BJA
Minute Secretary Peter Madden VK5PRM
Alternate Federal Councilor Don McDonald VK5ADD

We are pleased that we welcome new members: Bob Allan VK5BJA and Peter Madden VK5PRM. We hope that they will enjoy their time on Council.

FAREWELL AND WELCOME

At the same time, we regretfully farewell David Clegg VK5AMK, from his position on Council. David feels that looking after ESC is enough in itself and we are pleased that he will continue in that position.

We thank you for the years you have spent on Council, David.

I am also pleased to announce that we have a new Program Organiser. Hans Van Der Zalm VK5KHZ, has very kindly volunteered to take over that position and although we have quite a few meetings booked, I am sure that Hans would be delighted to hear from anyone with suggestions for forthcoming meetings.

I would also like to welcome aboard the husband and wife team of Trevor Love VK5GZJ, and his wife Brenda. They have volunteered to take over the Editing and Typing of the Journal. I understand that Trevor will do the Editing and Brenda will do the typing. Anyway, however it is done, we thank you very much.

UPDATE TO THE JUBILEE 150 AWARD LISTINGS

37	VK3CAY	45	VK2SU
38	VK2FRM	46	VK2AST
39	VK2NEV	47	VK5AQZ (2nd)
40	VK6SY	48	VK5AQZ (3rd)
41	VK4NWH	49	VK2KEW
42	VK5AS	50	L30444
43	VK2FFF	51	VK2DJJ
44	VK2CWS	52	VK4EJ

SPECIAL PREFIX

We are pleased to be able to announce that VK5 amateurs may use the VV-prefix from the 1st July 1986 to 31st December 1986, to celebrate our 150th year (the State of South Australia). We hope that you will make full use of it — but please do not bother to use it if you do not intend to QSL with that prefix. Many stations in the past have been disappointed by working a special commemorative prefix, only to have the station QSL with his ordinary call sign. Let us keep the goodwill flowing from VK5 this year.

LIKE TO HEAR FROM ANYONE!

It has been suggested that there could be a number of retired persons who would prefer to do a Novice or Bridging Course during the daytime, instead of coming out at night. As our current instructors are all employed during the day, I wonder if there are any retired teachers, Telecom

instructors, etc. who would be willing to take it. We would like to hear from anyone who would like to be in such a course. Telephone John Gardiner VK5PJG, on 283 6076.

ANY INFORMATION?

I am trying to help the Federal Historian, Max Hull VK3ZS, to research the history of the Greybeards. Questions that Max would like answers to are a. How and when the Greybeards originated, and by whom? b. How many Certificates were issued and to whom (list)? c. Was it a function of the SA Division? or d. If it was, or is a separate entity to the WIA, is it still in existence?

Any information will be gratefully received

DIARY DATES

July 22nd — General Meeting. Speaker, Steve Mahoney VK5AIM, on Antenna Rotators. Meeting begins 7.45 pm.
June 29th — Buy and Sell Night. Begins 7.30 pm

QSL BUREAU OPERATION

Our QSL Manager, John Gough VK5OD, has had several requests to publish information on QSL procedures and the following is in answer to those requests.

Costs for outgoing QSL cards are currently five cents each with no charge for QSL cards going to other VK5 members.

Incoming cards are taken to the monthly meetings at the Burley Griffin Building, West Tabor Road, West Tabor, on the fourth Tuesday of each month. Those having postal accounts with the Bureau have their cards posted to them after the monthly meetings (if they have sufficient cards to warrant postage).

The following procedures operate for those using the Bureau

Cards may be handed in at the meetings, posted or delivered to the Bureau as required.

NOTE: If cards are left at the Post Office for the Bureau, postage must be paid. (There is no mail delivery at Williamstown).

Cards are to be sorted into call sign areas, eg JAs together, Vs together, etc. Also any QSL Manager to be clearly shown or the cards

BEACON PLANNING

During the past year, the Federal Technical Advisory Committee (FTAC) investigated and produced Policy Papers on Band Planning, Packet Radio and Repeaters. This year it is Beacons which are to be investigated.

To date, Australia has developed and operates beacons on bands between 10 metres and 23 cm, with one on 10 GHz, in VK6 and 10 and 24 GHz being developed in VK2.

The function of a beacon varies depending upon the use each person makes of it. In the world of marine and aviation navigation, radio transmissions from a known position provide the bearings to calculate ones location.

To a radio amateur, a beacon provides a mixture of uses. Primarily, it is an aid to research and experimentation into the hobby. If one is local to a beacon transmission, it provides a source to check receivers and antennas against. If it is a distant transmission, then it provides an indication to the observer of a radio path between the two locations. On the microwave frequencies a beacon can often provide the only consistent signal source to enable one to become established on the band.

Australia's present beacon development can be divided into three groups:

HF, 10 metres as part of the International Beacon Project (IBP)

VHF and UHF, two and six metres, 70 and 23 centimetres, where the bands have been planned to have a beacon segment

Microwave, a region where beacon development is only just beginning.

The program for the investigation which is to conclude at the 1987 Federal Convention is as follows:

* submissions from interested parties to close 30th September 1986.

* plenary order to be published in January 1987, Amateur Radio

* presentation of paper to the Federal Convention in Melbourne, May 1987

Amateurs who would like to provide input should register their interest by writing to the FTAC Beacon Co-ordinator, C/- PO Box 204, Willoughby, NSW 2068.

Regular reports will appear in Amateur Radio. The next report will include discussion into the 10 metre concept — the proposed change from the present one-service-per-channel to the time-sharing by many systems of a single frequency.

Tim Mills VK2ZTM
FTAC BEACON CO-ORDINATOR

could finish up in the wrong place.

Place the Call Sign of Station Worked, on the back of the card at the top right hand corner, together with any VIA information.

Uncollected cards will be destroyed after a period of six months. Advice that cards are going to be destroyed will not be given. It will be done automatically.

Cards for countries that do not have a QSL Bureau are the members responsibility for direct QSLing. The VK5 Bureau only sends cards to other Bureaus.

Accounts may be operated by those who do not attend the meetings and can be done by depositing a sum of money with the Bureau by cheque, cash or money order. Stamped self-addressed envelopes are NOT acceptable for the despatch of cards as usually the envelopes are the wrong size or the postage is incorrect. When the account is getting low, advice will be included in with any cards being despatched. Cards will NOT be sent to accounts that are in arrears.

If you wish to collect or deliver cards direct to the Bureau, please ring first (ph. (085) 24 6171) to save a wasted trip if no one is at home.



WHO CAN'T LEARN THE CODE?

Reprinted from 73 Magazine, February 1972

"I'd give anything to get an amateur licence, but I'm one of those people who just can't learn the code." It seems there are more of these unfortunate each year swirling around the fringes of amateur radio. Let me tell you how this supposed inability to absorb an elementary skill all begins.

Many years ago there was no such thing as a person who couldn't learn the code. With equal enthusiasm young Johnny Ham tackled learning the code and how to build and operate his station. The required code speed in those days was only 10 words-per-minute for the General Class licence but then the only reason the FCC has since raised it to 13 WPM, I understand, was in response to the widespread conviction that the present generation was at least 30 percent more on the ball than the preceding one.

Then along came WWII with its urgent demand for far more military CW operators than amateurs could possibly supply. The armed forces set up radio schools and one of the entrance requirements was to pass a code aptitude test. Fellows with recent exposure to military methods can vouch safe that even today the armed forces are not notably successful in placing men in the areas of their greatest talent and interest.

Imagine then how it was all those years ago in the hurry and confusion of an approaching war. Great numbers of would-be radio operators were told they had no code aptitude and were summarily sent off to become cooks or hospital orderlies — for which they probably had no aptitude either.

With war's end and the resumption of amateur radio it didn't take long for the military radio school drop-outs to spread the idea that many people lack the wits to learn the code. Nonsense.

Anyone who has learned that when he hears the three syllables *dou-ble- you* pronounced it represents the letter W can also learn that three other syllables *dit-dah-dah* represent the same letter in Morse code. If one letter can be learned so can others — it's that easy. Building up speed is then a simple matter of repetition just as in any other subconscious skill, like tying your shoes, for instance.

Is there a valid argument to the contrary? If there is, I've never heard of it!

Written by R.B. Kuehn W0HKF for 73 Magazine and contributed by Phil Connolly VK2BPC.

CW as seen by 73 Magazine, February 1972

Cartoons by W0EJF



The Extra Class — "Nothing to it!"



The XYL.



The DXer — "First we send 'DE,' then our own call."



The RTTY Man — "How do you get 28 Characters from only ONE Key?"



The CW Man — "The only way to fly!"



A Typical CW Operator.



The Would-be Amateur.



The Novice — "What else is there."



WA Bulletin

Fred Parsonage VK6PF
HONORARY SECRETARY
VK6 DIVISION
PO Box 10, Perth, WA 6005.

REPORT OF THE AGM — APRIL 1986

The Annual General Meeting, held on 15th April 1986, was held immediately following the General Meeting. It was declared by the President that there were no nominations for Council and that the existing Council had decided not to re-nominate in order to encourage new blood. This left an impasse which the President resolved by invoking the Constitution which declares that, in the event of there being no nominations for Council, the existing Council will continue until replaced. Which means that your Council is a caretaker Council until the next AGM.

Reports were given by the Officers of the QSL Bureau, the WICEN Group, the Treasurer and JOTA. Votes of thanks were given to those concerned.

The resignations were regretfully received from our two auditors, Frank VK6JK and Adrian VK6HA. A vote of thanks was proposed and passed with acclamation. Two new auditors were elected, VK6TG and VK6HM.

No general business had been notified but VK6WT was allowed to move a vote of thanks for the work by the President and Council over the past year.

VK6WZ was allowed to express regret that no reports had been received from either the Slow-Morse Co-ordinator or the Broadcast Officer. This motion was lost as it was felt that it would amount to a vote of censure. Perhaps the officers responsible would note that the AGM is the time to report and it is the opportunity to record thanks to those who are on the teams.

The Patron for 1986 was discussed and it was agreed to ask the Governor of Western Australia to continue in this role.

PRESIDENT'S REPORT by Bruce Hedland-Thomas VK6OO

If this Annual report seems short, so did the year which it describes.

MEMBERSHIP
Because at the beginning of 1985 there were still problems with the computer in the Federal Office which prevented our receiving EDP sheets, it has not been possible to compare membership numbers from one January to the next. However, we can say that there were 744 members on 17th November 1984 and 754 on 20th November 1985. A net gain of members in what are still difficult financial times is creditable and is no doubt due to those members whose dedication and personal commitment is such that they uphold the Institute in on-air and off-air conversations.

A total of 64 membership certificates have been issued during the year and we welcome heartily all new licensees and former members re-joining.

MEETINGS

General Meetings have continued as usual on the third Tuesday, at Science House. In 1985, they were enlivened by a door raffle whose prize was donated each month by Dick Smith Electronics. There were also occasional lectures prior to the meeting which seem to be well received. Early in 1986, Gwyn VK6AJG, offered to become Program Organiser and we have already benefitted from his work with more treats to come on an approximately bi-monthly basis.

Don Lorrimer and Mark Bastin have continued to provide our cuppa at meetings and the problem of lack of volunteers to stay behind and help with the washing up has been solved by going over to disposable, insulating plastic cups.

The Christmas meeting was again organised by the re-doubtable Bastin family at the Westral Centre and was potentially the best yet. In response to suggestions, it was held on a Saturday night to allow country members to attend. This rather backfired because few country members attended and we were unaware that because of the advanced average age of radio amateurs, a goodly number are contracted to baby-sit their grandchildren on Saturday nights, thus the expected attendance numbers were not

FINANCIAL REPORT OF THE WIA (WA DIVISION) 1985

Balance sheet as at 31st December 1985.

1984	LIABILITIES	1985
20 152.08	1 Accumulated Fund lifted	22 858.81
1 123.81	2 Surplus (Trading Account)	3 501.59
1 582.72	3 Contingency Fund Interest	2 265.50
Net Worth =	4 Accumulated Fund offered	NI
1 400.00	5 Subscriptions in advance	28 625.70
362.50	6 WARC-90 Fund lifted plus this year	1 771.50
		2 109.50
	7 Sundry Creditors	453.92
3 333.22	8 Hugh Spence Memorial Fund	856.85
NI		
28 914.63		32 045.97
	ASSETS	
	1 Cash	
	— Contingency Account	1 735.39
	AUSCOM Transfer Account	
	AUSCOM 12101 @ 14.5%	3 684.80
	AUSCOM 12363 @ 14.5%	376.11
	plus accrued interest	18 317.10
13 130.49	— Trading Account	
	R 81 Cheque Account	891.24
	R 81 Golden Accty. A	2 739.77
	AUSCOM 12154 @ 13%	4 000.00
	plus accrued interest	686.79
	— Suspense Account	
	AUSCOM 12167 @ 14.5%	828.35
	plus accrued interest	28.30
	— Floats	
	Bank Shop	50.00
	Sundry	21.88
	WICEN	100.00
13 420.93	28 681.42	171.38
		27 463.63
	2 Trading Account Stock less written off	2 259.04
1 296.02		49.25
211.10		2 209.79
	3 Equipment lifted plus purchases less depreciation	899.84
999.34		834.52
44.00		100.19
303.40		1 344.66
	4 Sundry Debtors	
579.35		1 027.97
28 914.63		32 045.97

We certify that we have examined the books and vouchers of the WIA Division of the WIA, and have found them to be kept in a business like manner and to record the true financial position of the Division at the close of the period. We have received every assistance in the auditing of the accounts, and compliment Mr Bastin on the informative manner in which the books have been kept and the final accounts presented.

Signed: C A Bastin VK6LZ, Honorary Treasurer 7th March 1986.
Signed: F E Taylor VK6JK
Signed: A H Van Den Avort VK6TA
Honorary Auditors — 8th April 1986

PROFIT & LOSS ACCOUNT — EXPENDITURE	
1. ADMINISTRATION	
— Advertising	130.22
— Printing and Stationery	84.12
— Insurance	441.00
— Radio Licenses	84.00
— Postage and Boxes	463.81
— Phone	326.15
— Expenses	592.55
— Government Bank Charges	21.18
— Rent	596.87
— Federal Convention	23.90
— Sundries	303.52
	3 087.20
2. Life Members	147.00
3. Awards and Trophies	103.75
4. Donations (Mount Barker Antenna)	95.00
5. Christmas Dinner	1 020.00
— less receipts	795.00
	254.00
6. Equipment Depreciation	190.19
7. Stock Written Off	49.25
8. Contingency Fund Interest	2 265.50
W Spence Memorial Interest	34.50
Provision for WARC-90	336.00
	2 686.10

	1 123.61	6. Surplus (Trading Account)		3 501.59	
	8 001.70			10 121.06	
		REVENUE & LIABILITIES - continued			
4 002.74 662.57	4 065.11	1 Subscriptions Received this year Plus in advance billed	3 916.71 951.30		4 866.01
419.09 717.85 309.83	20.57 821.01	2. Donations 3. Bank Interest — Trading Account Received Plus accrued this year Less accrued last year	1 056.88 988.79 717.55	1 025.12	10.00
1 635.97 823.30 576.55	1 582.72	— Contingency Account 'red Plus accrued this year Less accrued last year	2 512.89 378.11 623.30	2 265.50	
		— Suspense Account 'red Plus accrued this year	86.30 35.50	64.80	3 378.22
29.34		4. Sundries — Tea Receipts — Raffles — Amends — Radio Rally	26.07 96.78 3.00		
143.47	171.81				129.83
	740.48	5. Gross Profit on Trading Account			1 737.02
	8 001.70				10 121.06

achieved, I suppose you could call it a financial failure, but a social success.

There was a Special General Meeting called during the year to discuss constitutional changes at which the members decided to permit the Vice-President to chair general meetings without the President necessarily being absent and that they did not wish to have two Vice-Presidents at the time. As a result of debate at this meeting a constitutional review sub-committee was formed. It has just reported and its recommendations will probably form the basis of a further Special General Meeting.

GENERAL

The bookshop, managed by Christine VK6ZLZ, continued as our only activity which provides a service to members and simultaneously an income for the Division. 1985, being the WIA's 75th Anniversary Year, there was a number of special items on sale by way of being mementoes of this historic occasion.

The following activities and services, WIGEN, Slow Morse, QSL Bureau, JOTA Organisation, Intruder Watch and News Broadcasts were all carried on despite difficulties within and without and it is right to express our gratitude to the volunteers who run them.

Once again we have received cheerful co-operation and sympathetic consideration from the officers of the local Department of Communication.

Finally, as President speaking on behalf of the members, I thank the Councilors and especially Fred VK6PF for their hard-working, dedicated service.

COUNCILLORS FOR 1986

Dave Wallace VK6W Membership Secretary
Alyn Maschetta Stirrer Extra-ordinary
VK6KWN Treasurer
Cliff Bastin VK6LZ Representing PARG
Cyril Price VK6MY Federal Councillor
Neil Penfold VK6NE President and
Bruce Hedland-Thomas Alternate Federal
VK6OO Councillor

Jill Weaver VK6YL Representing WARG
Douglas Gordon Broadcast Officer

Christine Bastin VK6ZLZ Book-sales Officer
CO-OPED

Fred Parsonage VK6PF Secretary

POSTAL ADDRESSES

WIA WA Division
PO Box 10
West Perth, WA. 6005

Book-sales
PO Box 425
Cannington, WA. 6107

QSL Bureau
PO Box F319
Perth, WA. 6001

Broadcast
PO Box 899
Fremantle, WA. 6160

TOWERS

With the present publicity regarding antenna masts and the Institute, it may be of interest to follow the case which, at the moment, is being pursued in the Division.

1. 24th September 1985 — VK6PK applied to the Shire of Wanneroo for a Building Licence to erect a 12 metre mast.

2. 14th October 1985 — Letter received from the Shire requiring the written consent of eight adjoining owners.

3. Approval was obtained from six owners and submitted to the Shire. Of the two objectors, VK6PK received less than due courtesy being ordered off one premises as he was trespassing. 4. 18th November 1985 — Letter received from the (now) City of Wanneroo adding another owner to the list stating "This address was omitted in error."

5. 3rd December 1985 — Article published in local newspaper under the heading Residents object to mast stating incorrect facts as quoted by the two objectors.

6. 10th December 1985 — Letter published in the same newspaper from the Division refuting the article.

7. 18th December 1985 — Council meeting of the City of Wanneroo. Agenda item 11232 was passed refusing the issue of a building licence on the recommendation of the Technical Committee. This agenda item stated "the applicant has obtained written approval from five owners and written objections from four owners." An incorrect statement as VK6PK received written permission from six owners and verbal refusals from two. It has since been ascertained that pressure had been applied to the original approvers causing one to renege.

8. 3rd January 1986 — Letter received from the City of Wanneroo stating that a building licence had been refused together with advice that VK6PK may appeal to the Minister for Local Government.

9. An appeal was put together by the Division including copies of the Noarlunga decision and papers on masts produced by the Department of Communications. This was made to the Minister and subsequently turned down.

10. 10th April 1986 — Solicitors Gibson and Gibson were consulted by the Division who referred the matter to Denis McLeod and Company, Barristers and Solicitors who specialise in Local Government. The following advice was obtained:

a. The Council's policy in requiring consent from all owners designated is within their power. It could be challenged as a matter of law, but this course is not recommended.
b. The addition to the list of another owner as shown in para 4 could be considered as being

after normal closure of such a list and could make a good point in an appeal.
c. Recommendations

1. Lodge a new application for a mast this time as a Property Development. In the event of another refusal (indefinite), the applicant may take the matter to the Town Planning Appeal Tribunal where he has the right to call witnesses, present his case and cross-examine objectors and Council.

« Lobby Councilors to show amateur radio is a well conducted hobby and that the policy is unfair towards that section of ratepayers. VK6PK is accepting the advice shown in 10c. and will be fully supported by the Division.

In the event that the Division decides to take legal help in presenting an appeal, an estimate has been given by the solicitors of between four and five thousand dollars.

The Division has now canvassed all the Councilors of the City of Wanneroo sending 11 sets of documents, followed by an additional three after local elections unseated three of the eleven. These documents included a letter explaining amateur radio and the Council policy. The Noarlunga decision which stated that amateur radio is normal use of a dwelling (not binding in WA), the Department of Communications submission on radio towers, a leaflet Amateur Radio in WA, the WIA handout Amateur Radio, The Hobby for Everyone, a letter from the Shire of Kalamunda thanking the Division for emergency support and details of the VK6PK case, asking that the Councilors support the changing of the policy. The documents were individually headed, addressed and hand-delivered to the Council Chambers on 17th April 1986, and to date (12th May), no acknowledgment of even receipt has been received from any of the Councilors.

A meeting has been held with the City Surveyor and some of his staff and, although they were very receptive, they did nothing but reiterate the Council policy.

For all members and non-members, take heed that your hobby is in danger regardless of how important you feel your hobby is. No One Wants to Know, and it is up to us to publicise anything which can credit amateur radio or before you know it, your local council will have your antennas down.

ARRL PETITIONS FCC

The ARRL has petitioned the FCC to require the labelling of home electronic equipment relative to its susceptibility to radio-frequency interference. The petition requests that the Commission require that a tag or label be attached to home electronic devices or their instruction manuals to indicate whether the device incorporates shielding, filtering or circuitry designed to reduce its susceptibility to nearby radio transmitters.

The tag or label also would warn the owner that the device may be subject to radio-frequency interference.

From The ARRL Letter, 8th May 1986

USA AMATEUR LICENSING as at March 1986

Taken from The ARRL Letter, 8th May 1986.	1985	1986
New First Time Amateurs	2001	1806
Novice Class Upgrading	933	877
Technician Class	418	311
Upgrading		
Novice Class Upgrading	376	337
Advanced Class	196	230
Upgrading		
Total Amateurs Upgrading	1923	1755
Amateurs Failing to Renew	518	1237
Change in Amateur Census	+ 1483	+ 439
Month End Amateur Census	410 775	420 787
Classifications		
Novice etc etc	2850	2740
Total Active Stations	413 625	423 527
Increase in Amateur Census		2.36%



Over to You!

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

EMERGENCY! ARE WE READY?

North America plays a vital role in Australia's amateur radio international communications emergency capability.

I would like to describe the situation so that more can join the work of the band of dedicated traffic handlers who maintain a daily international link.

The Australian Traffic Network is our equivalent to the US NTS and Canadian CTS.

Our two major links are with the International Assistance and Traffic Net (IATN) at 1100 UTC (US Summer time); 1130 UTC (US Standard time) on 14.303 MHz directed by VE3AJN and the Australian American Traffic Net (AATN) at 0500 UTC on 14.280 to 14.290 MHz and directed by K7OVK.

Generally one handles incoming calls and the other outgoing traffic. If any readers have any spare time at 0500 and 1100 UTC they would be welcome to check into both of these nets as liaison stations. This would help overcome the severe propagation fluctuations which cuts the traffic flow from one net for weeks at a time in some cases.

If the Mexico disaster happened tomorrow, the way the propagation is at present, we could help traffic via the USA at 0500 UTC but out-going traffic to Australia would be extremely difficult at 1100 UTC.

Having operators who could link both the IATN and AATN together would improve US, Canada and Australian capabilities of maintaining coordination for the next disaster.

During Mexico, we handled 600 messages by free telephone links to US amateurs, however, if these links were not available in the next disaster, we would only be as good as our present links.

Hence there is an urgency to improve international capabilities. Any assistance from Australian amateurs would be appreciated.

The two links, IATN and AATN, are of vital concern because Mexico demonstrated that emergency communications are best passed via North America, hence our world-wide capabilities are reflected in our links with IATN and AATN.

Links at 0430 UTC on 14.103 MHz LSB on packet radio are continuing but are not reliable due to phase distortion over the 10 000 km path, however, AMTOR mail-drop from 0600 to 0700 UTC. 7042.5 MHz is more reliable.

I would like to establish a 7 MHz AMTOR mail-drop from 0800 to 1600 UTC, bearing to the USA. AMTOR operators can access my mail-drop using self-call VB5.

My eventual idea is that two 7 MHz AMTOR mail-drops, one in each country could be dedicated to incoming traffic. Hence, large quantities of incoming and out-going traffic could be handled on two frequencies during the reliable eight-hour nightly openings (no skip zone with the east and west coasts being normally heard) on 7 MHz.

Yours faithfully,

Sam Voron VK2BVS,
Co-ordinator ATN,
2 Griffith Avenue,
Roseville, NSW. 2069.

ABLE OLD MEN

I was interested to read the news, by Jim VK3PC, about BY4 Able Old Men, page 30, *Amateur Radio* for May.

In particular, he mentioned Feng C1KF, which jogged my memory back to the late 1940s — to be more precise, 1947/48.

I used to work Fen and some of his countrymen quite regularly every Sunday afternoon. Some of these included Peter C1BC, Gai C1DK, Jack C1JC, Fred C1JH, Aun C3MT, Yeh C4HF, Mari C5UY, C6, Wauh C7WW, Chang C7TY and others. (Note: These call signs are taken from my QSL card collection).

However, Feng I remember best of all and I am pleased to read that almost 40 years later, and the Revolution to boot that he is still active, even if not



to the same degree as of old. I wonder what has become of some of the others I have mentioned.

However, back to Feng — it was one such Sunday afternoon that I first contacted him in Shanghai. For something to say, I mentioned that I lived during the week in a block of serviced units in Marion Hall in Margaret Street, Sydney — my home QTH was then at St Mary's, 40 miles west of Sydney, hence my operation being mainly on Sundays when I went home to use the rig.

I mentioned to Feng that I regularly saw a compatriot of his, by the name of Huang, who also lived at Marion Hall and who had worked in the Bank of China in Sydney, but that he had recently gone home to Shanghai.

When Feng came back to me he said that he knew Huang and we made a sched for the following Sunday.

To my surprise when we made contact, he passed the microphone over to Huang, who was in Feng's shack. We chatted for some time, as one can imagine.

Now my parents lived in Marion Hall also, and on occasions Huang used to go up to their flat for a cup of coffee. Not surprisingly he asked after them and I finished the QSO thinking that it was something of a coincidence and just left it at that.

To my surprise, some months later, my mother spoke to me about the QSO. It appeared that Huang had forwarded some sandals to her — not one but three pairs (one large, one medium and one small size). Huang didn't know what size my mother took so he thought that he sending three sizes he couldn't go wrong! He didn't — the medium size fitted.

What was that ancient Chinese script on BY4AOM's card? Within four seas there are boson friends, etc.

As a matter of interest, these contacts were made using 50 watts A4M to a full wave end fed Zep antenna on 14 MHz.

The accompanying card is my original C1KF QSL card.

73,

Allan Williams VK2FH,
20 Delecta Avenue,
Beauty Point,
Moorebank, NSW. 2085.

ASSISTANCE RECEIVED

I take great pleasure in writing this letter and feel I should convey my story to other amateurs.

Ever since I got my licence in 1984, I have been suffering considerable interference from a nearby cordless telephone. I believe that many others also have experienced similar problems but have never heard of an amateur who was able to resolve the problem.

After about 14 months of listening in on the conversations I decided to do something about it. I had gained all sorts of information from my monitoring, but the most valuable piece of data was the telephone number of the offending device.

I had telephoned this number and explained the problem to the owner who showed no concern that I was able to listen in on her conversations and I did not intend to contact the DGC. She had obtained the telephone whilst on a holiday in Malaysia.

The interference continued.

Finally, on 8th May, I sent a letter to the DGC informing them of this interference and requesting

any help or information to eliminate this problem. At 11am the following day, I received a telephone call from an officer at the DGC requesting further information. The officer was very helpful and informed me that he would advise the owner of the offending device to discount it or it would be confiscated.

Two days later I received a further call from the officer advising me that the device had been disconnected. I have suffered no further interference.

The DGC deserves applause for this excellent effort, and the speed with which it acted. With n five days of lodging my complaint the interference has ceased.

I hope that this story may help others who suffer interference on an already crowded band. It seems, however, that the DGC cannot act unless it has the telephone number or address of any interfering cordless telephone.

73,

Chris Chapman VK3VCC,
2 Ravenscroft Crescent,
Mount Eliza, Vic. 3890.

WHY NOT A COMPETITION?

Keep up the new trend of more construction articles in *Amateur Radio*. Why not have a competition for the best construction article contributed?

Al Edgar VK6ZAY,
15 Giesdill Way,
Leeming, WA. 6155.

PIRATING A CALL SIGN

Having just received another QSL card from a ZL for a contact I never had, plus numerous other cards I have received from amateurs and SVLs alive for QSOs I haven't had. I would like to alert readers that my call sign has now been pirated for over two years — and I am getting a little tired of it.

At my place of work there are four of other amateurs who, at some time or other have also had their call signs pirated.

I am sure the amateur fraternity at no really aware of the extent of the pirating that goes on, or don't care, unless it is their call sign that is being pirated. I read in the April issue of *Amateur Radio* a VK/ZS who complained that a yacht was using his ZS call. This does not surprise me.

A close friend who is into yachting informs me that a very high percentage of ocean going yachts carry unlicensed amateur transceivers. He personally knows of three such vessels.

It is not unusual when a yacht is for sale that an amateur transceiver is part of the inventory, as essential as a depth sounder or sextant. These people are naturally going to pirate someone's call sign. Frequently when yachts reach Australian waters they use a Caribbean or Panamanian call sign.

There may be a simple way to reduce MM pirates. Every ocean going yacht, upon entering Australia has to be cleared by Customs and Immigration. When Customs go aboard searching for prohibited imports they could also look for illegal amateur transmitters. Perhaps this may be too simple. I have no answer for land-based pirates, except for very heavy fines and confiscation.

Long-time AR Member,

J Gravins VK4JS,
36 Robinson Street,
Moorekool, Qld. 4105.

RISK OF CONTROVERSY

I wish to refer to the Education Notes by the Federal Education Officer VK3KT, in April 1986 *Amateur Radio*. I wish to point out that the prospective amateur is confused enough as it stands at the moment without mistakes creeping into the trial examination papers. I refer to question 4 where it is obvious to me, but perhaps not to someone else, that the symbol for volts has

been used instead of ohms. In question 17 the answer is given as (g) but in fact (c) is the correct answer. I think that if the WIA really wants more amateur operators on the air-waves and more members of the WIA, they will have to get their act together and check that all questions and answers are correct both as they arrive from the Education Officer and as typeset by the printer.

At the risk of causing further controversy, I wish also to give my thoughts on the use of the bands by the different classes of licenses. That a full call licensee use all bands as at present, A Z call to have the use, at full power, of all bands excluding the CW portions. After all he has the full theory. The novice to have the use of all bands including the CW portions at reduced power. Perhaps 10 watts on the HF bands and two watts on UHF and VHF.

The K calls could still be used by those who have to up-grade their CW and would have the use of full power on voice and reduced power on CW.

I also think the time has come for the WIA to press for RTTY, Packet Radio, ASCII and other such modes of transmission to become the subject of separate exams as the single exam has become too broad to be covered by a single exam paper and that the use of such modes of transmission be not allowed until the amateur has sat and passed the necessary exam on the subject. In short, each exam paper should cover a smaller range of subjects in a more thorough manner.

In closing, I must ask the WIA if it has the intestinal fortitude to publish this letter in its entirety?

Yours faithfully,

Dennis Spark LS0100,
PO Box 18,
Goomalling, WA. 6460.

Why not, Dennis? Many good suggestions, or at least food for thought. The problem of ambiguous exam answers (and errors) is being discussed at present, we are well aware of it.—Ed.

NEW TO RADIO

I am only new to amateur radio, but I am very disappointed as when I switch on my set and hear someone talking, it takes ages for them to stop talking to give the next person a turn.

I have spoken to a few amateurs who say the same thing. To me it is something to share. Another thing is when you are in a room and you are asked a question — by the time it is your turn again you have forgotten.

I still feel that amateur radio is a wonderful hobby.

During a holiday in New South Wales a few months ago I listened to four amateurs talking and using the repeater sensibly.

Yours faithfully,

Torry Blenkiron VK3AGS,
Box 364,
Bordertown, SA. 5206.

CAN'T LEARN THE CODE?

Upon reading *Over to You* in the May edition of *Amateur Radio* and noting Peter Scales VK6KHZ's remark "I was discouraged by the CW examination", referring to the five words-per-minute CQC test, I couldn't help finally putting fingers to the keyboard. I might say at this point that I don't really have any particular beef with Peter's letter, as I think he found himself in a similar position to many others, but what I am about to say has been on my mind for some time now.

During the period of time that I have enjoyed the privilege of the amateur radio hobby, I have not ceased to be amazed at the number of amateurs and would-be amateurs who throw up their hands in despair at the thought of a CW test. "The uselessness of the whole exercise, out-moded; something out of the past", are remarks we have all heard before, plus many others, no doubt. How difficult is it really to learn something as basic as Mr Morse's international code? Sure, at the outset of my first attempts to master the art of CW it did seem to be a daunting task, but within very little time, much to my surprise, I found that all the basic characters had been learned. This, did not at this stage put me in the box-set for an examination pass though, as my subconscious

motor skill in receiving the code had not yet developed.

How many times have you witnessed a very young child taking those first shaky steps in learning to walk? How many times have we seen a child give up and not wish to master the art of walking? It is only with great difficulty and perseverance that the youngster manages to stay upright and push forward. How many of us, who have no physical disabilities, ever think twice about placing one foot in front of the other when we walk down the street now? The will to succeed is the only reason we are able to walk today, that the South Pole was reached, or that Everest was conquered. May I, at this stage, say that the ability to send and receive CW at five or 10 WPM doesn't even rate with the above-mentioned ability or feats. Yes, it is that easy! If you can learn the words of a song you can learn the 26 letters and 10 numerals required to get you through the test.

If you are having difficulty in mastering the code, then almost without exception it would be right to say, you are not putting in regular daily practice, as this is the only requirement necessary.

Just think! If Sir Edmund Hillary had been content with the good view from the halfway up Everest, he would not have had the exhilaration of standing on the summit and gaining the full perspective. Why not give it a go too, and reach for the top!

Yours faithfully,

Phil Connolly VK2BPC,
PO Box 104,
Toronto, NSW. 2283.

DISCUSSION PAPER

With reference to various letters relating to the Discussion Paper, the one I must write in support of is from Gerry Preston VK5PI, regarding the Youth Radio Club Scheme which used to exist.

The voluntary one-to-one approach is very beneficial (not only in amateur radio, particularly) to the young person who does not know anybody in amateur radio. He or she there-by gains a contact who is interested in their personal progress and can encourage them into the correct skills relating to operating and building things.

73,

Bron Brown VK3DYF
99 Coom Street,
Rosebud, Vic. 3839.

ANY INFORMATION ON A GEIGER COUNTER?

The recent nuclear disaster has once again demonstrated that amateur radio is a vital information source in time of disaster.

As I write, radio-active products are finding their way into the water supplies and food chains of the Northern Hemisphere.

A study of global wind pattern charts, which are readily available from Admiralty Chart Agencies, reveals that the mixing of Northern Hemisphere air with that of the Southern Hemisphere can easily take place at this time of year.

Australian experts have predicted, via the national press, that it will be at least a year before the fallout will be detected in this country and that it will be harmless by then.

Oh, will it now? Well, I'm not convinced. How nice it would be if I had my very own Geiger counter, so that I could decide for myself whether my tomatoes, antennas, or anything else that I may come into contact with will be better left alone for a while.

It is unlikely that this will be the last nuclear catastrophe and I would like to build a Geiger counter, just in case. Can anyone help?

I recall a design in a hobby magazine some years ago, however I cannot remember which one I have a Geiger-Müller tube — Mullard type MX 103 with four pins. Has anyone got any information on its characteristics? Or has anyone got a Geiger Counter they would care to sell?

All letters received will be answered.

Paul Weaver VK6OF,
23 Waddell Road,
Palmira, WA. 6157.

JOHN MOYLE CONTEST

The accompanying photograph was taken during the 1986 John Moyle Memorial Field Day Contest. Participation was in the single operator CW 24 hour section using a TS-1205 powered by a 12 volts lead acid accumulator which was charged by an E300 generator. The battery powered the rig, light and a fan during the hot daytime operating in the tent.



The tent, antenna (an all-band dipole supported by two gum trees), and equipment were set up at the site one hour prior to commencement of operation at 0330 UTC on Saturday, 15th March. The number of contacts worked on CW were 98.

Next year, if the solar powered rule applies, I think there will either be all solar powered stations in the field, or no entrants at all. This rule with the 10 bonus points for solar is such a handicap for conventional powered portable stations, it is impossible to be competitive. No matter how good the operator, or the efficiency of the station in the field, there is no chance of competing on an equal basis. There are just not enough stations to work.

The cost of setting up a solar unit is also beyond the financial resources of the average amateur at this time.

Yours faithfully,

Pete Alexander VK2PA,
Rolands Plains,
Via Telegraph Hill, NSW. 2441.

0 =

INTRODUCTION

This is just a few lines on my introduction to radio in a new state.

Arriving just before Christmas, my wife and I moved into our house early in January. I quickly put together the FT7 and a 21 MHz dipole, did the necessary legal work and after a short time, had the chance to press the button.

Very soon I made contact with a fellow ACT resident.

As I was from Queensland, I used my VK4 call sign portable one, but something was wrong with the rig and my contact could not make sense of my transmission.

"You're a pirate, you're a pirate," he screamed. Well! I fell off my seat. "Pirate, I'm not a pirate," I yelled at the speaker (not on air).

My friend then took stock of himself and decided to play it safe — press the button once for yes and twice for no, OK.

"Beep"

"Are you an amateur?"

"Beep"

We then counted until we got to four using the same procedure and N for novice.

Then we had a little trouble. He wished me to send the next letter in Morse. It had been sometime since I had passed the exam and, although I did find Morse fascinating, I could not think of the code.

I rushed into the lounge room to the unpacked tea chests. My wife, concerned at me casting everything all over the room, inquired the reason.

"I'm looking for a book with Morse Code in it," I yelled. "He called me a pirate."

Finally, locating the book, I rushed back to the shack. I could hear my contact saying something so I pushed the button. No reply. Later I opened the rig, moved all the PCBs, poked this and pushed that and tried again. I then had a fine contact with a Brisbane station.

The whole point was that there was something wrong with my rig. All my contact had to do was

saying "There's something wrong with your transmitter, OM" and I could have gone off the air to check the fault.

If anyone else hears a strange noise on the air — it may not be pirates but some poor operator that just needs a kind word and constructive advice.

Allan Stephenson VK1UNL,
100 Darwinia Terrace,
Chapman, ACT. 2611.

PRACTICE DETRACTS FROM THE HOBBY

The use of commercialised call signs has recently become more frequent all over the amateur world. I don't know whether, as an organised international body of friends, we should go into competition with the state-owned commercialised postal authorities who, by now, issue commemorative stamps on the slightest pretext.

There is, of course, nothing wrong for a radio amateur association to issue to its members, on request and on payment of a small fee, special commemorative QSL cards, to be adorned with the sender's usual call sign. This has been done, for instance, for the 1000 year anniversary of the town of Steyr, in Austria.

Special call signs and prefixes lead to difficulties in country identification, cause problems for newcomers to the DX bands and are not included in the various call books. I feel quite strongly that this practice detracts from the basis of our hobby and should not be accepted by the world body. I don't know whether the APRIL recognises commemorative call signs for their various awards; I believe they, as well as the WIA, should refuse to accept cards with call signs other than those routinely issued.

It would be interesting to know whether other amateurs agree with my opinion.

Yours sincerely,

George Cranby VK3GJ,
PO Box 22,
Woodend, Vic. 3442.

PRESERVE AMATEUR TECHNIQUES

The Amateur Radio editorial of January 1986, encourages me to write about an aspect of amateur radio that has been agitating me. The concern is for all the wonderful developments and techniques that have been inspired by amateurs. We cannot retrace these developments except in museums and history books. What about the techniques? Is there a place in amateur radio to keep these things actively alive?

There are three distinct periods preceding the solid-state revolution. Veterans, which includes sparks, arcs, crystal detectors and coherers. Vintage, triodes have changed the whole concept of radio. Stout hearts toiled on to conquer MF, HF Broadcasting, SSB, Superhets and Television. Not a bad score for 1920-1930.

Classic, the valve gained more elements, versatility, performance, frequency range and size. Crystals appeared in transmitters/receivers and there was 25 years of dizzy expansion and refinement in every aspect.

The 30 years of solid-state has left us with equipment of brilliant specification and little personal input or identification. I believe we can still demonstrate our capacity to transform bits and pieces into an effective radio system.

I suggest on old days, a competition based on vintage past techniques. Eg Build a three-stage 25 watt transmitter and three valve receiver for 10 MHz using triodes only. Or, a triode 25 watt

transmitter for 18 MHz with a six valve receiver, superhet, any valve. Or for variety, a five metre maximum vertical on 3.500 MHz, 25 watts valve transmitter, receiver optional. Again, a 25 watt FM transmitter into a four valve converter to any FM broadcast receiver or 25 watts of AM on 160 metres and the receiver a converted broadcast receiver.

The same parts can be re-used in the different rigs — versatile?

Run the contest from 1st July to 30th September. Score by the number of call districts worked and QSLed by 31st December. This is an amateur, not an operators control Nostalgic — maybe, encouraging ingenuity and initiative. Yes, 75 years of WIA AR has passed — let us sponsor a move to Preserve Amateur Techniques.

73 VK3Z Robert McGregor VK3XZ,
2 Whitliffe Drive,
Somerville, Vic. 3912.



QSP

FOUR ANTENNAS

Four sophisticated antennas will let IntelSat VI communications satellites concentrate signals on four major population areas on Earth. The four square antennas used in combination represent a new technology breakthrough made possible through advanced computer-aided design/computer-aided manufacturing (CAD/CAM) techniques.

The antennas receive microwave signals from Earth and re-transmit them with pin-point precision. Without the square antennas, those signals would be uselessly dispersed over populated and unpopulated areas alike.

From ITU Telecommunication Journal, April 1988

Silent Keys

It is with deep regret we record the passing of —

NEW ZEALAND BROADCASTING

VK2ETU

12th May 1986

Obituaries

ROBERT A (BOB) CROWE

The news of the untimely passing of Bob Crowe, on 18th May, was received with deep regret in the Victorian Division of the IARU.

Bob was held in high regard by all amateurs in the State for his sensitivity to their needs in his role as State Manager, Department of Communications.

At regular quarterly meetings of the Department and the Victorian Division, which he instigated, Bob was always ready with a positive attitude to ideas and requests put to him, on behalf of the amateur service, and he often made special personal efforts to ensure that approvals could be available when needed, at short notice.

His advice and guidance were well respected. Bob's interest in amateur activities was reflected in his leadership of a courteous, efficient staff and his willingness to address amateur meetings in his private time.

He will be missed by all. The Victorian Division of the WIA extends to his wife Joan, his family and friends its sincere sympathy in their loss.

EDWARD M SIMPSON

VK2ES

It was with a great sense of loss that I read (in March 1986, Amateur Radio), of the

passing of Edward (Ted) Simpson BEM, on 21st June 1985.

My first meeting with Ted occurred when I was a teenager living in the eastern suburbs of Sydney, he at Bellevue Hill and I at Deulieu Bay.

On my O-V-I, with coils wound on old valve bases, I would listen to Ted and his mate, Bruce Glanders VK2XS, conducting their experiments with controlled carrier on Ancient Modulation, with an occasional try-out of musical numbers such as *Smoke Gets in Your Eyes* and *A Little White Gardenia*, etc.

Looking back — Hi-Fi it was not, but oh! the excitement of it all.

With some encouragement from Ted and Bruce, around 1934-35, and with a lot of help from members of the old Waverley Radio Club VK2BV, I eventually managed the AOCF in 1937. Little did I know that would be in store within a few short years.

By the end of 1939, war was brewing and in early 1940 a letter arrived, from VK2ZK asking for volunteers for a Special Wireless Group to be formed for use with the AIF. Well, one can guess whose old familiar face came into view upon arrival at the old Seymour Army Camp in Victoria, during June 1940 — it could only be Sergeant E M Simpson.

We then formed Nos 1, 2 and 3 Wireless Telegraphy Sections (Ancient Modulation was only used sparingly).

October 1940 saw us on the high seas, sweating in winter uniforms, in Colombo, Ceylon (now Sri Lanka), finally ending our long journey at Kilo 89 Army Camp, near Gaza, Palestine (now Israel). Here we celebrated my 21st birthday with the local boys.

By January 1941, we were taking part in the Benghazi Derby, overseen by a master of military matters, General Archibald Wavell, with over 40 000 prisoners taken. Our 105 sets provided communication back to Cairo, all along the Libyan Coast, past Benghazi, finally stopping at Mersa Bragay El Agheila with the 16th Brigade Infantry AIF.

Wireless vans were never popular with the forward troops because they were always obvious to field-glasses or the naked eye. "Get out! You fellows will only draw the 'crabs'" was the constant cry from the people at the sharp end of things.

The growing crisis in Europe drew us back to Alexandria (Kingi Maryut Camp) in March 1941, and in what seemed the twinkling of an eye, we were pitched into the Greek Campaign, initially on Mount Olympus, commuting with the Ancient Gods of Greek Mythology, but moving forward to the Allakmon Line as matters became serious.

It was for his outstanding performance in organising communications during the Greek Campaign that Ted received the British Empire Medal.

The same old touch was evident in his handling of our forward signals support of the 7th Division AIF elements in the Syrian Campaign.

It was obvious that we were held in high regard by the powers-that-be, considering that quite a few members had just managed to crawl out of Greece and Crete by the strangest of means in some cases.

In the Desert War, Ted would instruct his troops in the use of the Sun Compass and how to deal with the sandy wastes. He was indeed a man of many talents — slow, laconic, a big bony man with an all-seeing eye — but a very good boss.

Under his command, we worked with the RAF and later the RAAF (Air Support Signals), Royal Corps of Signals (Army of the Nile, 8th Army, Polish Brigades, etc), Royal Australian Armoured Corps, and various elements of Signals in the Northern Territory (NT Force).

In 1944, I parted company with Ted, hearing of him only occasionally in civilian life, other activities precluding his pursuit of amateur radio.

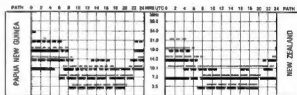
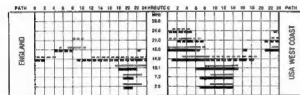
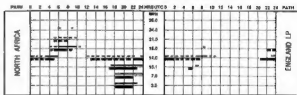
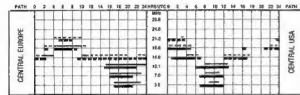
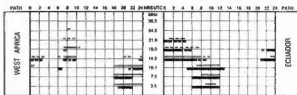
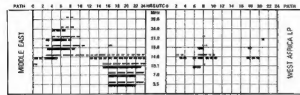
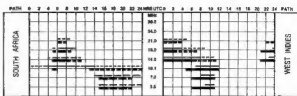
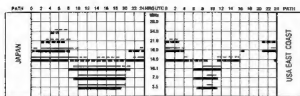
Farwell Edward Simpson BEM!

We can ill afford to lose such a soul!

Contributed by Arthur Pearce VK2AV

Ionospheric Predictions

Len Poynter VK3BYE
14 Esther Court, Fawkner, Vic. 3060



LEGEND

From Western Australia (Perth)

From East Australia (Cairns)

From New Zealand (Dunedin)

From Western Australia (Perth)

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From New Zealand (Dunedin)

Solar Geophysical Summary —for March

Solar activity was at low levels during March except for the period 3-5 when two energetic flares were observed. The region which produced these flares decayed as it crossed the solar disc and was without spots when it crossed the western limb on 15th March. The transit of this region produced an enhancement of the 10 cm flux early in the month peaking at 93 on the 4th and dropping to solar minimum levels after 15th and continued till the end of the month.

The 10 cm readings for the month were: 1=86; 2=89; 3=92; 4=93; 5=92; 6=89; 8=86; 10=83; 11=90; 12=78; 13=75; 14=74; 15=71; 16=70; 17=70; 18=71; 19=71; 20=71; 21=71; 22=71; 23=71; 24=71; 25=71; 26=71; 27=71; 28=71; 29=71; 30=72; 31=71. Average was 77.1 and the sunspot average was 15.7. The running yearly average was 17.1 for September 1985.

GEOMAGNETIC

The field became disturbed about 1030 UTC on 6th and remained at storm levels until 1500 UTC on 7th

March 13

March 22

March 24, 25

March 27

with the field generally active for the first half of the 8th. A=29, 23, 19. The field was at active levels. A=18.

The field was at active levels with brief periods of minor storm conditions. A=18.

The field was at generally active levels on 24th and at minor storm levels between 0600-0900 UTC and 1500-1800 UTC on 25th. A=15, 24. The field was at active to minor storm levels for the first half of the day. A=19.

March was a quiet month with only one day, the 6th, on which the A index exceeded 25. The extended period of disturbance expired from 20-27 was weaker than expected and the A index only exceeded 20 on one day during this period.

From data supplied by the Department of Science IPS Radio and Space Services — March 1986.

DEADLINE

All copy for inclusion in the September 1986 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by 9am, 21st July 1986.

Hamads

PLEASE NOTE: If you are advertising items FOR SALE and WANTED please write each on a separate sheet of paper, and include all details; eg Name, Address, Telephone Number, on both sheets. Please write copy for your Hamad as clearly as possible. Please do not use scraps of paper.

* Please remember your STD code with telephone numbers

* Eight lines free to all WIA members. \$9.00 per 10 words minimum for non-members.

* Copy in typescript, or block letters — double-spaced to Box 300, Caulfield South, Vic. 3162.

* Repeaters may be charged at full rates

* QTHA means address is correct as set out in the WIA current Call Book

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as relating only to private articles not being resold for merchandising purposes.

Conditions for commercial advertising are as follows:
\$22.50 for four lines, plus \$2.00 per line for part thereof.

Minimum charge — \$22.50 pre-publication
Copy is required by the Deadline as indicated below the entries on page 1 of each issue.

TRADE ADS

AMIDON FERROMAGNETIC CORES: Large range for all receiver & Transmitting Applications. For data & price list send 10x22mm SASE to: RJ & J IMPORTERS, Box 157, Morfale, NSW, 2223. (Inquiries at office ... 11 Macken Street, Oakley, NSW, closed for business during July. Agencies at: Geoff Wood Electronics, Rozelle, NSW; Truscott Electronics, Croydon, Vic; Willis Trading Co, Perth, WA. Electronic Components, Fishwick, Plaza, ACT.

FREE TO REPEATER GROUP

SIX QUARTZ RESONATORS: of about 155 MHz working frequency, but would probably tune down to the 2m band. Size 60 cm x 10 cm diam. Weight each 5.5 kg. New owner can pay freight. VKCAZT, Ph:(069) 42 1392.

WANTED — NSW

BASE STATION: 2m FM transceiver, VK2BZM, Ph:(02) 29 1768 BH or 498 2258 AH.

CIRCULAR PANEL METER: or meter movement. FSD-30 A, resistance 1500 ohms. Any reasonable price. Also, information on US Army Signal Corps BC-348-P radio rx, especially the Handbook of Maintenance instructions — to buy or copy. Andrew VK2EPO, GTHR, Ph:(02)638 9310.

TECHNICAL DETAILS: and/or circuit diagram for Pye P5728 power supply. Will cover any expenses incurred for photocopies, etc. Gerald VK2AGS, GTHR.

TRIANGULAR WIRE: section approx 7m high. Yaesu FT-70R 70 cm all-mode and Benchner key paddle, Larry, Ph:(049) 949 3124.

TRU-BAND BEAM: 3 elements or more in reasonable condition. John VK3CJV, Ph:(02) 805024 AH or 886 8285, Ext 54 BH.

VALVES: pair 800 valves. VK2ZVE, GTHR, Ph:(02) 645 1078.

WANTED — VIC

TELETYPE MODEL 18: with repeater/counter attachment. Model 14 tape distributor. Prefer non-synch motor type. Colin Grae, PO, Cavendish, Vic. 3408, Ph:(055) 74 2316.

TONO 5600E: or equivalent. VK3CGG, GTHR, Ph:(057) 83 124 AH.

YAESU FDX-100: old SSB txv. Not necessarily in complete working order but reasonable exterior appearance considering age. Ian VK3YAK, Ph:(03) 523 9405.

WANTED — QLD

COMPUTER: Tandy PC-2 Sharp 1500 with or without peripherals. Must be reasonable price. PO Box 6051, Cairns, Qld. 4870.

LINEAR AMPLIFIER: in very good condition. Also antenna tuner. Laurie VK4FUC, GTHR, Ph:(070) 65 8207.

POWER SUPPLY: 20A, 12V power supply. AT-250 tuner, fixed xtal osc for Atlas 110, mobile mount for same. Mobile mount for TS-43. Qld. Ph:(076) 34 3239 AH.

WANTED — WA

TRI-BAND YAGI: TH3JR or similar. Also suitable rotator. All letters answered. Cyril VK6OE, GTHR, Ph:(09) 277 0349 BH.

VK2A FT-202: DM HF or any Yaesu/Kenwood HF txv with WAIC bands. Reasonable price please. Ken VKEBZ, GTHR, Ph:396 7829.

FOR SALE — ACT

KW-2000: KW Electronics (UK) HF txv. 1.8-30 MHz. 814W output. Rk OK. Tx needs overhauling. Handbook, circuit, some spare tubes. In condition as found. \$150 ONO. Offers by mail or further details. Frank VK1XE, GTHR.

TOKYO HI-POWER 2m GA6AF LINEAR AMPLIFIER HL-62Y: Produces 40W from 2.5W input (FT-280) or 60W

from 10W input. Exc. con. \$195. Laurie VK1KEL, GTHR, Ph:(062) 54 2878.

YAESU FM-107B TCVR: In-built PS supply plus all WAIC bands. In immac. cond. YM-35 ms, instr. manual. \$750 ONO, plus freight. Available mid-July. Jock VK1LE, GTHR, Ph:(062) 58 1810 BH.

FOR SALE — NSW

COMPUTER SYSTEM: Ferguson B2w two with two 8 inch disk drives, KBD, power supply, CPM disks, misc SW etc. \$450 ONO. IBM compatible, 640K mem, 2 disk drives, 20 Mbit hard disk, colour board, serial, parallel port, colour monitor-multi-function card, Diablo 630 Daisy Wheel 40 CPS printer. \$3500 ONO. Will separate. Tally dot matrix printer 9600 Baud. \$200. 8 inch disk drives. \$550. 240V 50 Hz 100.00. Contact VK2ZPM, GTHR, Ph:(02) 628 1904.

HUSTLER MOBILE ANTENNA SET: RM80 to 10 loading coils (5), metal, spring, mounts, etc. \$150. Roger VK2ONX, GTHR, Ph:(02) 548 1827.

KENWOOD DGS: freq display for TS-520S, TS-520, \$200 ONO. Kenwood ext VFO-520. \$200 ONO. Kenwood MC-50 mic. \$40. Vancos 3 pos antenna switch. \$20. H/B 10 15m & 40 Yagi. \$50 ONO. 1 W/killard VK2PXB, GTHR, Ph:(049) 32 2935 after 4 pm.

NOVICE STATION: Kenwood equipment. TS-120V txv, PS-20, AT 120, VFO-120, Dynamic mic, manuals. \$500 ONO. Kenwood AT-230. \$150. Allen ex-VK2VJ, GTHR, Ph:(02) 888 3417.

TS-160S TCVR: Sino 951746. Good cond. Manual, cartons, CW filter. No mic, no mem, no WAIC. PS-33 per, supply. Sino 1011400. Best written offer to PO Box 40, Bomboles, NSW. 2632. Peter VK1BON2.

UHF and VHF ANTENNAS: two 2m, 6 element Yagi. \$300 each. Two 2m, 12 element Yagi. \$500 each. Two 70 cm 17 element Yagi. \$400 each. Designed for satellite work and built to BS specifications. Matching baluns for all. Larry, Ph:(02) 949 3124.

YAESU FT-101 TCVR: with mic, fan, instruction book, good order. \$375. Bruce VK3BMB, GTHR, Ph:(086) 92 2892.

YAESU FT-101 HF TCVR: with good cond with mic & manual. \$400. Tel 95-0805 rx with manual. \$100. Bob VK2MYM, GTHR, Ph:(063) 51 4217.

YAESU FDX-401 TCVR: very good, clean condition in going order. Full test power, complete with desk mic & manual. Price \$300. Ph:(086) 55 6135 AH.

YAESU FT-757GX HF TCVR: with MH189 scanning mic, FT-57AT auto antenna tuner, FR-757 HD VFO with power supply, owner and workshop manuals. Very good condition in original cartons. Sell new buyer. \$1750. Jim VK2VWT, GTHR, Ph:(043) 41 7993.

YAESU FC-700 ANTENNA TUNER: in perfect condition, original packing. \$185. Weiz 2 position coaxial switch with UHF connectors, works up to 900 MHz. Brand new. \$30. Yaesu RSG-2A, auto on 2m. \$10. Yaesu RSG-1, 80m resonator. \$30. Both in exc. con. Write to VK1KEL, GTHR, Ph:(02) 517 2853.

FOR SALE — VIC

BACK COPIES OF AR: 1968-1985 complete, except for Feb 68, Oct 68, Jan 71, Sept 78, Mar, Apr, May, July, Nov, Dec. All \$100 for complete set. (Will not separate). Bruce VK3ZM, Ph:(02) 725 7262.

BENDIX COMPAS RX: R-101A/RN-6 with control box & circuit diagram. C-42 FM TdRc 36-60 MHz. PSU hermes, etc. Mx-28 Compas rx chassis, no box. 2 control boxes. Ph:(052) 48 1410 AH.

FORESTPOND: on 1.625 MHz. \$45. Pye Overland on FM net (0 ch). \$50. AWA 25m (5S) 6m FM with simplex & repeater ch. \$90. Dick Smith Commander 2m FM assembled & going. \$180. Pye Overland on 2m FM repeater 2 (ideal shack monitor rx). \$45. Pye Overland on old 6m AM net. \$3.000 MHz. \$45. All ONO. Ian VK3YAK, GTHR, Ph:(03) 523 9405.

ICOM IC-551Fm txv: pass band tuning plus 640 amplifier & power supply. 100% original condition complete with packaging & manual. \$480. Rod VK3DQJ, GTHR, Ph:(54) 26 1909.

TOWER: free-standing commercial 42 feet in 3 sections. Lower section steel, upper sections special light-weight high tensile alloy. Will take large beams with high wind loading. Ext base fixed on rig. Can be inspected with T147 being operating. Easy to lift. If you are interested, you could arrange to meet me in Vic by negotiation. \$800. Barry Wilson VK3XV, Ph:(03) 597 4478 BH or (03) 527 4429 AH.

YAESU FDX-400: Amstebur band rx, 180-10m plus 6 & 2m. CW, 2, USB/LSB, AM narrow, AM wide, notch filter, noise blanker, 100 kHz/25 kHz calibration, external VFO output for transceive, clarifier, etc. Excellent condition except for faulty LSB xtal. \$150. VK3BGF, GTHR, Ph:(03) 221 2778.

YAESU FT-202: with FP-300 power supply. Spares. Good order. \$250. VK3VFE, GTHR, Ph:(059) 75 1475.

YAESU FT-202 TCVR: & matching FP-300 power supply. As new condition. \$250. 1 KW HB with Yale Dice Popper copy of Health product, 2 x 372Bs. \$250. RAN type PRA-1 panoramic adaptor. This is a large unit weighing 70 lbs. \$85. 100TH power triodes, 4 available, 3 of which still in cartons. \$25 each. Ken Pincott VK3AFJ, GTHR, Ph:(03) 23 5775.

FOR SALE — QLD

ICOM IC-701 HF TCVR: Icom IC-400, 430 MHz all-mode. Icom IC-290 144-148 MHz all-mode. PCA. Yaesu 144-148 MHz FM scanning txv with scanning mic. \$300. Three VHF SWR hand-helds, have crystals for 2 channels for 2 radios. All circuits available. \$180. Andy VK4KX, Ph:(079) 719 251.

KENWOOD TS-520B: 8 band HF txv. Can be fitted with 1 WAIC band. Brand new in box. Only \$700 ONO. VK4JHM, Ph:(070) 91 3219.

RTTY PC BOARDS: also drilled & assembled & tested for modulators, demodulators, monitors, etc. XR high speed cassette interfaces. Contact the Secretary, SEQDT, PO Box 184, Fortitude Valley, Qld. 4006.

WIRELESS STATION TXER C11: plus DC 24V & AC power supplies, connecting cables, junction boxes, headsets & other accessories. Was in good working condition when last used. Military surplus item. Rhode & Scharuz WP BH440 free meter & sig generator. Free range 50 kHz-30 MHz. Made in Germany. Is in good working condition. (Military surplus, is a good collectors item). For further details contact Graeme VK2DB, 28 Bromer Street, The Gap, Qld. 4081. Ph:(077) 500 1966.

VAESU FT-202R: 2m, 25W FM txv. Full 144-148 MHz, scan, 10 memory channels, etc. Very compact unit. Ideal for mobile VQCG. \$300. Will pay freight. VK4BZB, Ph:(067) 345 8731 AH.

FOR SALE — TAS

KENWOOD TR-8400: 70 cm mobile txv. As new & priced to sell at \$200. Kevan VK7KV, GTHR, Ph:(062) 43 6972.

STOLEN EQUIPMENT

The following equipment has been reported stolen at the Earlow Police Station, by DB Watts VK2OBB.

Yaesu YM-38, Dynamic Microphone, Yaesu FT-757GX, Solid State Transceiver, Serial Number 3N040371, (call sign or name etched under one handle); and Yaesu FC-707, Antenna Tuner, Serial Number 11140775.

Any member with any knowledge of this equipment should contact their local police station or the VK2 Divisional Office.

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TUNE INTO VALUE!

Enjoy 2m and 70cm in one compact unit!

Cat D-3515



- Features**
- 25W continuous on both bands
 - Wide angle LCD display
 - Two 4-bit CPUs for complete control
 - Scanning mic and mobile mounting bracket

Amateur value that's hard to beat! Enjoy the best of both worlds (2m and 70cm) without the expense or space problems of two transceivers. Yaesu's FT-270RH combines both bands in one unit with an impressive array of features. There's programmable scanning, 10 channel memory scan and priority too! Dual independent front ends, local synthesizers, full duplex crossbanding and much more!

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Performance 2m Mobile Action!

Now more than ever you can enjoy the open road of 2m traffic with Yaesu's FT-270RH. This feature packed compact is designed with two microprocessors for supercharged action. 10 Memories give you the channels you want at the touch of a button. Advanced scanning facilities let you tour through the band with ease. And dual VFOs let you handle the 2m pile up and win through every time.

Features: • LCD display — with backlight • Unique die-cast, duct-fused heatsink • Compact — just 140x162x40mm • High/low power output: 45/5W.



Cat D-3517

\$879

NC-15 Quick Charger

Cradle-type charger/supply powers up FNB-3 or FNB-4 NiCads in no time: just around 3-4 hours... that's all! Features auto charge sensing. Can double as a handy base supply, too.

Cat D-3513

Was \$185

\$165

HF Mobile Antennas

Superb range of loaded whips from Mobile One — the Australian manufacturer that knows what you want! All feature adjustable tuning (no cutting required) with heavy duty stainless steel stock, mobile mounting base, RG58C/U coax and PL259 connector.

80 Metre, Cat D-4307

40 Metre, Cat D-4308

20 Metre, Cat D-4309

\$59⁹⁵

each

Yaesu Scan Mic

Excellent value! And so convenient too. Hand held mic suits all Yaesu transceivers with scanning facilities. Just plug in (standard 8 pin plug) and you're on the way to easy scanning operation. Perfect for mobile use. 500 ohm impedance.

Cat C-1116

\$51⁵⁰



PTT Switch

Perfect match for our YH-1 headset (C-4195) for better communication — especially mobile! Two-way switch with locking tx one way. PTT other. With LED indicator. 7 pin mic socket. Cat D-3512



\$45⁹⁵

Maldol Duplexers Save Up To \$10!

What a bargain! Maldol duplexers add versatility to communications: single transmission lines are so much more convenient!

2-5m, 50/144MHz
Cat D-3555

Was \$62.95

\$52⁹⁵

2m - 70cm
Cat D-3550

Was \$56.50

\$49⁵⁰

SAVE \$10! SAVE \$7!

Mobile 757 Bracket
Mount your FT-757 transceiver securely... three angle positions available; place unit in suspended or slung position. Secure either under dash or on transmission tunnel.

Cat D-2549

\$56

Economy 70cm Hand Held



SAVE \$40!

Was \$575

Yaesu FT-703R — a superb little transceiver with all the most wanted features — without the expensive frills! Covers 430-440MHz with simple thumb wheel setting. There's squelch and volume controls, repeater offset switch and high/low power control. But if that weren't enough: • VOX (with optional YH-1 headset) • Wide operating voltages: 5.5-1.3V • 2.5W power output (10.8V FNB-3 battery included).

Cat D-3508

Value Plus!



70cm Push Button

Cat D-3509

Yaesu's FT-703R — packs a load of features and performance in a compact, hand held unit! It's not weighed down with expensive extras... just the most wanted features to enjoy UHF: • 10 Memories • 5 scanning modes: selective, priority, band, skip and busy or clear • Choice of Hi or Lo (optional) battery packs: FNB-3 (10.8V, 425mAh) or FNB-4 (12.5V, 500mAh) batteries. Battery not inc.

\$499

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B.222/JA

New IC-R7000



Introducing a Professional Scanning Receiver at an Affordable Price. **25-1000MHz Plus!**

frequency coverage
(no additional module required
for coverage to approx. 2.0 GHz.)

ICOM announce a scanning receiver that offers professional performance with IC-R7000 advanced technology - 25-1000MHz coverage, multi-mode operation and a sophisticated scanning and recall system.

IC-R7000 covers aircraft, marine, business, FM/AM broadcast, amateur radio, emergency services, government and television bands.

ICOM IC-R7000 has many outstanding features.

- **99 MEMORIES:** You can store up to 99 of your favourite frequencies for instant recall. Memory channels can be called up by simply pressing the memory channel knob or direct through the keyboard.
- **KEYBOARD:** Tuning can be quickly achieved by selecting precise frequencies directly through the

IC-R7000 keyboard or by turning the main tuning knob.

- **SCANNING:** Instant access is provided to commonly used frequencies through the scanning system. The Auto-M switch enables signal frequencies to be memorized while the IC-R7000 is in the scanning mode. Frequencies that were in use can be recalled at the operator's convenience. An optional voice synthesizer automatically announces the scanned signal frequency to ease problems with logging.
- **MULTI MODE:** Push button selection enables FM wide/FM narrow/AM/SSB upper and lower modes to be received.
- **6 TUNING SPEEDS:** 01, 1.0, 5, 10, 12.5 and 25 kHz through knob selection.

● ADVANCED TECHNOLOGY

CONSTRUCTION: The IC-R7000 has dual colour fluorescent display with memory channel readout and dimmer switch.

Dial lock, noise blanker, combined S-meter and centre meter.

Optional RC-12 infra red remote control operation. All the above professional features are produced in a convenient, compact unit of size:

Height 282mm
Width 286mm
Depth 276mm

- Specifications guaranteed from 25-1000MHz and 1260-1300MHz. No additional module is required for coverage to approximately 2000MHz. No coverage is available from 1000-1025MHz.

Please send me details on:

☐ IC-R7000 ☐ ICOM's full range of communications equipment.

Senders details:

NAME _____

ADDRESS _____

POSTCODE _____

PHONE: _____ (BUSINESS) _____ (HOME)

POST TO: ICOM, 7 DUKE STREET, WINDSOR, VICTORIA, 3181. PH: (03) 529 7582.

All stated specifications are approximate and subject to change without notice or obligation. ICOM customers should be aware of equipment not purchased at authorized ICOM Australia Agents. This equipment is not covered by our parts and labour warranty.

ICOM 3355



ICOM

The Frequency of Ideas.